Five-Year Review Report

Second Five-Year Review Report
For the
Somersworth Sanitary Landfill Superfund Site
Somersworth, New Hampshire

September 2010

PREPARED BY:
United States Environmental Protection Agency
Region I
Boston, Massachusetts

Approved by:

James T. Owens III, Director
Office of Site Remediation and Restoration
U.S. EPA, Region I

Date:

9-23-10

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LIST OF ABBREVIATIONS

AFCEE	Air Force Center for Environmental Excellence
ARARs	Applicable or Relevant and Appropriate Requirements
BRW	Bedrock Well
CD	Consent Decree
CE	chlorinated ethene
CTW	Chemical Treatment Wall
DCE	dichloroethene
EPA	United States Environmental Protection Agency
ft	feet
GMZ	Groundwater Management Zone
ICL	Interim Cleanup Levels
in	inch
LFG	Landfill Gas
LFGVS	Landfill Gas Venting System
MAROS	Monitoring and Remediation Optimization System
NHDES	New Hampshire Department of Environmental Services
NPL	National Priorities List
O&M	Operation and Maintenance
PCE	tetrachloroethene
PID	photoionization detector

PLC	permeable landfill cover
POC	point of compliance
ppb	parts per billion
ppm	parts per million
PRA	Preferred Remedial Action
PRB	permeable reactive barrier
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SOW	Statement of Work
TBCs	To be considered
TCE	trichloroethene
µg/L	micrograms per liter
VC	vinyl chloride
VI	vapor intrusion
VOC	volatile organic compound
WMD	Waste Management Division
WSD	Work Settling Defendants
ZVI	zero-valent iron

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Executive Summary

The remedy implemented at the Somersworth Sanitary Landfill Superfund Site in Somersworth, New Hampshire included installation of a Chemical Treatment Wall (CTW) along the down-gradient edge of the landfill, placement of a permeable soil cover over the landfill, installation of a bedrock extraction well and recharge of extracted groundwater into a gallery on the landfill, institutional controls, and monitored natural attenuation of contaminated groundwater down-gradient of the CTW. The Site achieved construction completion on September 9, 2005. The trigger for the First Five-Year Review Report was the actual start of construction on July 17, 2000. The trigger for this second Five-Year Review Report was the approval of the first Five-Year Review Report, on September 30, 2005.

This Five-Year Review Report presents a summary of: 1) the Site conditions and the remedy implemented; 2) progress since the last Five-Year Review was conducted; and 3) the process that was conducted to prepare the Five-Year Review. The report also presents the results of a technical assessment of the remedy which has concluded that: 1) the remedy is functioning as intended by the decision document; 2) some exposure assumptions and toxicity data, used at the time of the remedy selection are no longer valid; and 3) no information has come to light that could call into question the protectiveness of the remedy.

No issues that affect the current protectiveness of the groundwater components of the remedy have been identified. However, a number of issues affecting the future protectiveness of the remedy were found: *1. Measures taken to control landfill gas emissions, to address potential future risk posed to recreational users, regulatory changes to ARARs, and land use restrictions for soil/landfill material are not presently incorporated into the CERCLA remedy; 2. Additional overburden groundwater data is necessary to confirm that the vapor intrusion (VI) exposure pathway to residents near well B-12R is not complete; 3. The ROD required that appropriate low-flow data for inorganics in groundwater be collected during the remedy, however this data is still outstanding; and 4. Available records indicate that the City reclaimed area was capped with an adequate amount of fill materials, and that surface soil was characterized. However the actual reports and data have not been located to confirm that there are no potential risks to future recreational users of the Site.*

The recommendations and follow up actions consist of: *1. Incorporate measures taken to: a) control landfill gas emissions, b) address potential future risk posed to recreational users, c) regulatory changes to ARARs, and d) land use restrictions, into the remedy through a supplemental CERCLA decision document; 2. Collect additional*

overburden groundwater data and any other necessary information to confirm that the VI exposure pathway to residents near well B-12R is not complete; 3. Conduct groundwater sampling for inorganics to confirm that representative concentrations are consistent with background concentrations; and 4. Examine the reports and data that characterize the nature and depth of the materials capping the City reclaimed area. If these reports can not be obtained, or the data is deemed insufficient, then conduct further evaluations to confirm there are no potential risks to future recreational users of the Site.

The City's use of approximately ten acres of the eastern portion of the former landfill as a recreational area (prior to NPL listing of the Site) and its potential risks were not evaluated by the risk assessment used to develop the CERCLA remedy. However, in 2006 the City of Somersworth pondered the possibility of redeveloping approximately 10 acres on top of the landfill area covered as part of the CERCLA remedy, into soccer fields, and to aid in the planning of such redevelopment, the City commissioned Geosyntec Consultants to perform a Screening Level Risk Assessment. This risk assessment evaluated potential health risk to users of the proposed recreational facilities as well as users of the existing ones for a number of potential exposure pathways[1]. The exposure pathways evaluated for these receptors (users) were the direct contact with VOC containing soils at the permeable landfill cover (PLC) and the inhalation of VOCs from landfill gas migrating through the PLC or vented via the landfill gas (LFG) venting trench. It did not identify unacceptable risks for recreational users from any of these pathways. EPA and NHDES favorably reviewed the assessment and provided guidance on additional requirements to safeguard the health and safety of patrons should the proposed activities be pursued. Subsequently the City of Somersworth aborted the redevelopment plans due to cost limitations, but the regulatory agencies did reiterate standards, based on the CERCLA remedy, that needed to be met for active recreation to be permitted on the PLC area of the landfill.

Given the ongoing recreational use of the Site and its potential future expansion, the CERCLA remedy needs to be modified to include a full assessment of recreation use of the Site and to identify what additional remedial measures may be required to address potential future direct exposure of recreational users to Site contaminants.

The remedy is considered protective in the short-term because groundwater institutional controls are in place, landfill gas control measures have been implemented, and sufficient cover is present on top of the landfill and around recreational areas of the

[1] Pathways pertaining to potential risks from covered landfill material/contaminated soils in the eastern portion of the landfill that is being used as an active recreation area was not evaluated as part of this study.

Site to prevent exposure to contaminated media. The integrity of the landfill gas control measures and the permeable landfill cover has been periodically verified through numerous site inspections performed by the Settling Defendants' consultant and independent site inspections performed by EPA and NH DES. In order for the remedy to be protective in the long-term, the follow up actions listed in this Five-Year Review Report need to be taken, groundwater cleanup goals must be attained as specified in the ROD, and final closure of the landfill must be completed.

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Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: **Somersworth Sanitary Landfill**

EPA ID *(from WasteLAN)*: **NHD980520225**

Region: I	**State: NH**	**City/County: Somersworth/Strafford**

SITE STATUS

NPL status: ☒ Final ☐ Deleted ☐ Other (specify)

Remediation status (choose all that apply): ☐ Under Construction ☐ Operating ☒ Complete

Multiple OUs?* ☐ YES ☒ NO	**Construction completion date:** 09/09/2005

Has site been put into reuse? ☒ YES ☐ NO The eastern portion of the Site is being used for recreation. The western portion, that includes the PCL, has not been put into reuse.

REVIEW STATUS

Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Gerardo Millán-Ramos

Author title: Remedial Project Manager	**Author affiliation: EPA Region I**

Review period:** 10/16/2009 to 09/23/2010

Date(s) of site inspection: 06/09/2010 and 06/29/2010

Type of review:

☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion

Review number: ☐1 (first) ☒ 2 (second) ☐3 (third) ☐Other (specify) _____

Triggering action:

☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#__1__
☐ Construction Completion ☒Previous Five-Year Review Report
☐ Other (specify)

Triggering action date *(from WasteLAN)*: 09/30/2005

Due date *(five years after triggering action date)*: 09/30/2010

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

1. Measures taken to control landfill gas emissions, to address potential future risk posed to recreational users, regulatory changes to ARARs, and land use restrictions for soil/landfill material are not presently incorporated into the CERCLA remedy.

2. Additional overburden groundwater data is necessary to confirm that the vapor intrusion (VI) exposure pathway to residents near well B-12R is not complete.

3. The ROD required that appropriate low-flow data for inorganics in groundwater be collected during the remedy; however this data is still outstanding.

4. Available records indicate that the City reclaimed area was capped with an adequate amount of fill materials, and that surface soil was characterized. However the actual reports and data have not been located to confirm that there are no potential risks to future recreational users of the Site

Recommendations and Follow-up Actions:

1. Incorporate measures taken to: a) control landfill gas emissions, b) address potential future risk posed to recreational users, c) regulatory changes to ARARs, and d) land use restrictions for soil/landfill material, into the remedy through a supplemental CERCLA decision document.

2. Collect additional overburden groundwater data and any other necessary information to confirm that a VI exposure pathway to residents near well B-12R, is not complete.

3. Conduct groundwater sampling for inorganics to confirm that representative concentrations are consistent with background concentrations.

4. Examine the reports and data that characterize the nature and depth of the materials capping the City reclaimed area. If these reports can not be obtained, or the data is deemed insufficient, then conduct further evaluations to confirm there are no potential risks to future recreational users of the Site.

Protectiveness Statement(s):

The remedy is considered protective in the short-term because groundwater institutional controls are in place, landfill gas control measures have been implemented and are effectively operating, and sufficient cover is present on top of the landfill and around recreational areas of the Site to prevent exposure to contaminated media. In order to be protective in the long-term,

the follow up actions listed above need to be taken, groundwater cleanup goals must be attained as specified in the ROD, and final closure of the landfill must be completed.

1. INTRODUCTION

The purpose of a Five-Year Review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The United States Environmental Protection Agency (the "Agency" or "EPA") has prepared this Five-Year Review report pursuant the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) § 121, 42 U.S.C. § 9621 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions takes as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.*

The EPA, Region I, has conducted this Five-Year Review of the selected remedy at the Somersworth Sanitary Landfill Superfund Site (the "Site") in Somersworth, New Hampshire. The review was conducted by the EPA Region I Remedial Project Manager for the Site, with the assistance of the Working Settling Defendants, the State of New

Hampshire, and a review team comprised of EPA and New Hampshire Department of Environmental Services (NHDES) legal and technical experts, from October 2009, through September 2010. This report documents the results of the review.

This is the second Five-Year Review for the Site. The triggering action for the first statutory review was the date of actual on-site mobilization for construction of the first phase of the remedy (July 17, 2000). The trigger for this second Five-Year Review Report was the approval of the first Five-Year Review Report. The statutory Five-Year Review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

2. SITE CHRONOLOGY

The chronology of events for the Site is presented in Table 1 below:

Table 1: Chronology of Site Events

Major Activity	Date	Milestone
Pre-CERCLA Site Development	1978	City finalizes covering the eastern ten acres of the landfill and developing recreational fields in the area.
	1981	City ceased waste disposal at Site
National Priorities List (NPL)	Sept-1983	Site placed on NPL
Record of Decision (ROD)	June-1994	ROD Signed
Bedrock Extraction Well Installation	April-1996	Installation of BRW-1
Remedial Action Design	April-1999	100% Design Approved by EPA and NHDES
	July-2000	Updated 100% Design Completed
Institutional Controls	January-2000	City adopts zoning ordinance establishing a Groundwater Protection District, implementing groundwater institutional controls
Construction of Chemical Treatment Wall (CTW)	8-Jul-2000	Initiation of CTW Work pad Construction
	1-Aug-2000	Excavation of First CTW Panel
	11-Sep-2000	Backfilling of Final CTW Panel
	28-Sep-2000	Completion of CTW Construction Activities

Construction of Landfill Cover[2] and Bedrock Extraction System	6-Jun-2001	Project Kick-Off Meeting and Initiation of Construction
	29-Aug-2001	Final Inspection Meeting for Cover and Bedrock Extraction
Construction of Landfill Gas (LFG) Venting System	30-Oct-2003	Pre-Construction Meeting on Site
	1-Nov-2003	Initiation of Excavation Activities for LFG Venting Trench
	12-Dec-2003	Completion of Excavation for LFG Venting Trench
	18-Dec-2003	Completion of Backfilling of LFG Venting Trench
	8-Jan-2004	Completion of Site Grading for LFG Venting Trench
	11-Jun-2004	Completion of Site Restoration for LFG Venting Trench
Pre-Final Inspection	15-Jun-2004	Pre-Final Inspection Meeting
Construction Completion	09-Sept-2005	Completion of the Remedy's Construction
First 5-Year Review Report	September 2005	Completion of the first 5-Year Review Report

3. BACKGROUND

3.1 Physical Characteristics

The Somersworth Sanitary Landfill Superfund Site (the Site) is located on the north side of Blackwater Road approximately one mile southwest of the center of the City of Somersworth (the City) in Strafford County, New Hampshire as shown in **Figure 1**. The Site layout is shown in **Figure 2**. The dominant Site feature is a former sanitary landfill that extends over an area of approximately 26 acres. The extent of the property currently owned by the City at and around the landfill is shown on **Figure 1.**

The landfill is located entirely within the Peters Marsh Brook surface water drainage basin. The brook flows northwesterly through the wetlands at the Site into Tate's Brook, which in turn flows into the Salmon Falls River which is located about one mile east of the Site (see **Figure 1**).

[2] The permeable landfill cover (PLC) was only for the remaining 16 acres of landfill per the ROD.

The Site is relatively flat and low lying (see **Figure 2**) except that the quarrying activities immediately to the north of the landfill have resulted in the presence of a 15 to 20-foot vertical escarpment which runs parallel to the northern edge of the landfill cover area. The western edge of the landfill cover area slopes downward toward the wetland.

The Site is underlain by an unconfined sand and gravel aquifer ranging from about 15 to 75 feet thick. Metamorphic bedrock occurs beneath the sand and gravel overburden deposits. A peat layer is present at ground surface in and near the wetland. Groundwater flows through the overburden in a northwesterly direction. The bedrock is fractured, with flow in the shallow bedrock appearing to be slightly north of west. Groundwaters from both the bedrock and overburden discharges to Peters Marsh Brook and the wetland, to the west of the landfill cover area.

3.2 Land and Resource Use

The landfill accepted municipal and industrial wastes from the mid-1930's to 1981. Initially the wastes were burned, but in 1958, the burning was stopped and the wastes were land filled after excavating the natural soils. Soils were used to cover the wastes daily and the landfill expanded westward. The approximate extent of buried landfill wastes is shown on **Figure 2**.

The City of Somersworth owns the entire landfill area and much of the wetland areas to the northwest of the former landfill. Numerous residential properties exist to the south, east, and west of the Site, including two apartment buildings located adjacent to the northeast corner of the Site. A National Guard Armory and fire station are also located to the east of the Site, and a cemetery is located to the northeast.

Approximately 10 acres of the eastern portion of the former landfill on the Site were reclaimed by the City prior to the Site being listed on the NPL for use as recreational facilities (tennis and basketball courts, ball fields, and a playground). According to available information, these 10 acres were covered with clean fill consisting of 2.5 feet of gravel and 8 inches of loam, and it is currently known as the Forest Glade Park.[3]

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[3] October 14, 1992 Cambridge Environmental Inc. *Risk Assessment for the Somersworth Sanitary Landfill, Somersworth New Hampshire*
May 21, 1983 Foster's Daily Democrat *City tests report soil satisfactory.*

Additional reuse options for the PLC area of the landfill have included the potential for soccer fields. The area of the Site not formerly developed as a landfill, is primarily wetlands, and a small portion of this area is being considered for reuse as a multi-use recreational trail.

3.3 History of Contamination

Groundwater sampling conducted at the Site during the Remedial Investigation and Feasibility Study (RI/FS) between 1985 and 1992 indicated the presence of the following volatile organic compounds (VOCs):

- trichloroethene (also know as trichloroethylene; TCE);
- tetrachloroethene (also known as tetrachloroethylene or perchloroethylene; PCE);
- 1,1-dichloroethene (1,1-DCE);
- cis and trans isomers of 1,2-dichloroethene (cis-1,2-DCE and trans-1,2-DCE, respectively);
- 1,2-dichloroethane (1,2-DCA);
- vinyl chloride (VC);
- benzene; and
- methylene chloride, also known as dichloromethane (DCM).

Metals(including antimony, arsenic, beryllium, and chromium) were detected in groundwater samples collected using standard techniques during the RI/FS at concentrations that may result in unacceptable risk assuming future residential use of the groundwater. However, the concentrations of metals in up-gradient samples were not statistically different from down-gradient ones, indicating that metals are naturally occurring and therefore no groundwater cleanup levels were set for these in the 1994 ROD. Polychlorinated biphenyls (PCBs) and pesticides were not detected in the groundwater samples.

The 1994 ROD indicated that the groundwater VOC distribution had reached a steady-state condition and VOCs had extended approximately 1,700 feet down gradient of the landfill. Groundwater sampling conducted during Remedial Design indicated that

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March 17, 1983 Foster's Daily Democrat *Students banned from park built on Somersworth dump.*

by 1998, the extent and overall concentration of VOCs in groundwater was significantly less than prior estimates (about 1,200 feet down-gradient of the landfill) and that significant natural attenuation of the VOCs in groundwater was occurring (Beak, 1998). More recent sampling (Geosyntec, 2008 and Geosyntec, 2009) provides additional evidence that natural attenuation is ongoing. (See Section 6.4 and recent annual reports cited in **Attachment A** for more detail.)

Subsurface soils from test pits and borings sampled during the RI/FS had low concentrations of VOCs and semi-volatile organic compounds. Surface soil within the landfill area was not sampled. VOCs were detected in sediment and surface water samples from the wetlands in 1985 and 1986; no VOCs were detected during subsequent sampling of the surface water in 1992 (sediments were not re-sampled).

In 2006 samples of sediment pore water and surface water in the wetland down-gradient of the CTW were collected. No significant concentrations of VOCs were measured in pore water or surface water samples. For more details please see Section 5.2

3.4 Basis for Taking Action

The 1994 ROD for the Site (Section IV) states that, *The selected remedy was developed by combining components of different source control and management of migration alternatives to obtain a comprehensive approach for Site remediation. In summary, the selected remedy provides treatment of contaminated overburden and bedrock groundwater with flushing of contamination from the source area. This remedial action will address the principal threat to human health and the environment posed by the Site: the potential future ingestion of contaminated groundwater.*

The ROD also established Interim Cleanup Levels (ICLs) for eight VOCs in groundwater as listed below:

• benzene	5	micrograms per liter (µg/l)
• methylene chloride	5	µg/l
• tetrachloroethene (PCE)	5	µg/l
• trichloroethene (TCE)	5	µg/l
• 1,1-dichloroethene (1,1-DCE)	7	µg/l

- cis-1,2-dichloroethene (cDCE) 70 µg/l
- trans-1,2-dichloroethene (tDCE) 100 µg/l
- vinyl chloride (VC) 2 µg/l

The six chlorinated ethenes (i.e., PCE, TCE, 1,1-DCE, cDCE, tDCE, and VC) in the above list are referred to as the "CEs" at the Site.

Potential risks posed by exposure to contaminated soil/landfill material were not quantified in the ROD.

4. REMEDIAL ACTIONS

4.1 Remedy Selection

The ROD for the Somersworth Sanitary Landfill Superfund Site was signed on June 21, 1994 (EPA, 1994).

The remedial action objectives (RAO) stated in Section VII, Part A of the ROD were:

- *Prevent ingestion of contaminated groundwater by local residents;*
- *Prevent the public from coming into direct contact with contaminated solid wastes, surface soils, surface water, and sediments;*
- *Reduce or eliminate migration of contaminants from the solid wastes or soils into ground or surface water*[4]*;*
- *Reduce or eliminate off-site migration of contaminants in excess of regulated allowable limits; and*
- *Ensure that the groundwater and surface water have residual contaminant levels that are protective of human health and the environment.*

[4] Under the remedy called for in the 1994 ROD, this RAO would not be met until groundwater standards are achieved and a final cap is installed on the landfill.

To meet these objectives, the selected remedy described in the 1994 ROD included both source control and management of migration components to obtain a comprehensive remedy for the Site.

The source control remedial components of the preferred alternative included:

- *installation of a treatment wall composed of impermeable barrier sections and innovative, permeable, chemical treatment sections to provide in-situ (in-place), flow-through treatment of contaminated groundwater at the landfill waste boundary (the compliance boundary). The barrier sections, sheet piling or slurry walls, will direct contaminated groundwater through the treatment sections where detoxification of the VOCs will occur; and*

- *placement of a permeable cover over the landfill allowing precipitation to flush contamination from the waste area. This cover will remain as long as contaminants continue to leach from the landfill waste and the chemical treatment "wall" is functioning. After cleanup levels have been achieved and can be maintained without use of the treatment "wall," EPA will evaluate an appropriate landfill cover to be installed to close the landfill.*

The management of migration remedial components of the preferred and contingency remedies included:

- *installation of a pump in bedrock monitoring well B-12R to extract contaminated groundwater. The contaminated groundwater will be either discharged onto the landfill to enhance flushing or injected just upgradient of the chemical treatment wall to receive treatment for the preferred alternative or treated with the extracted overburden groundwater for the contingency alternative. The need for bedrock groundwater extraction wells down gradient of the chemical treatment wall or perimeter slurry wall will be investigated during the design. This investigation will focus on the number, location, and flow rate of the wells; the timing of their installation; and the impacts on the overall groundwater cleanup.*

- *natural attenuation of contaminated groundwater beyond the compliance boundary to lower contaminant concentrations through physical, chemical and biological processes until groundwater cleanup levels are met.*

Additional remedial components of the selected remedy included:

- *institutional controls to ensure that the affected groundwater will not be used until groundwater cleanup levels have been met;*

- *a fence will be installed around the landfill to prevent access; and*

- *a detailed groundwater monitoring program to be developed during remedial design. The program will address long-term monitoring of the aquifer and performance monitoring of the chemical treatment wall.*

Finally, the 1994 ROD included a contingency alternative. The contingency alternative was to be invoked if it was determined that the source control preferred alternative would not meet performance standards. The source control contingency alternative included:

- *construction of a diversion trench on the upgradient side of the landfill to intercept and divert groundwater around the landfill. To the extent practicable, this diverted groundwater will be used to recharge the downgradient wetlands. A perimeter slurry wall would be completed around the landfill waste. Permeable treatment sections of chemical treatment wall would be removed and replaced by slurry wall material. The final component would be a landfill cover which complies with RCRA C requirements. The purpose of these components is to lower the groundwater to below the waste in an attempt to meet interim groundwater cleanup levels in the overburden aquifer at the compliance boundary. The groundwater levels would be monitored to determine if the water table would be lowered below the waste and groundwater quality would be monitored to ensure that overburden groundwater will meet interim groundwater cleanup levels at the compliance boundary. If either of these conditions cannot be met, then extraction and treatment of overburden groundwater from within the slurry wall will be implemented. The remedial design will determine the number, location and pumping rates of each well, as*

well as, the most appropriate treatment technology and discharge location. On-site treatment and disposal methods and pretreatment and discharge at the Somersworth wastewater treatment facility are the two options which will be evaluated.

4.2 Remedy Implementation

The components of the source control and management of migration preferred remedial action (PRA) that have been implemented at the Site are described in the following subsections.

4.2.1 Source Control Preferred Remedial Action (PRA)

The Source Control PRA included installation of a zero-valent iron (ZVI) Chemical Treatment Wall (CTW) to provide in-situ, flow-through treatment of groundwater containing chlorinated ethenes (CEs) at the down-gradient edge of the waste management area of the landfill. Construction of the CTW commenced in July, 2000 and was completed in September, 2000 at the location shown in **Figure 2**. According to the Statement of Work in the Consent Decree (CD) (EPA, 1995), the CTW must prevent all untreated overburden groundwater that contains CEs at concentrations greater than ICLs from migrating from the landfill to areas beyond the point of compliance (POC), except for insubstantial amounts of such groundwater[5].

The Source Control PRA also included placement of a permeable landfill cover (PLC) over the approximately 16 acre management area (excluding the approximately 10 acre reclaimed area developed by the City in 1978). The purpose of the PLC is to prevent direct contact with the underlying waste material, allow for infiltration of precipitation through the landfill and control erosion. The PLC, which was installed in 2001, consists of approximately six inches of coarse backfill material and six inches of topsoil seeded with native grass. The PLC covers the portion of the landfill not currently used for recreational activities.

[5] The POC is the edge of the waste management area, except where the CTW has been constructed, in which case it is the outer edge of the CTW. See Figure 2 for details.

Finally, the Source Control PRA must also assure that groundwater migrating from the landfill to areas beyond the POC does not contain >ICL concentrations of benzene or methylene chloride (EPA, 1995).

4.2.2 Management of Migration Preferred Remedial Action (PRA)

The Management of Migration PRA included installation of a bedrock, groundwater extraction well (BRW-1), located adjacent to bedrock monitoring well B-12R, which is approximately 80 feet south of the edge of the landfill/waste (see **Figure 2**). The extraction well was installed in April, 1996, while the infrastructure needed to extract and discharge contaminated groundwater into an infiltration gallery located on top of the landfill was completed during the summer of 2001. Bedrock groundwater extraction commenced in November, 2001, with discharge of the extracted groundwater to the infiltration gallery located up-gradient of the CTW. As of January 2010, a total of approximately 23 million gallons of groundwater has been pumped from BRW-1 and discharged through the infiltration gallery located on top of the landfill.

In addition to bedrock groundwater extraction at BRW-1 (and groundwater treatment via the CTW), monitored natural attenuation (MNA) is also a component of the Management of Migration PRA. Monitoring for natural attenuation parameters has occurred since completion of the CTW and operation of the bedrock extraction well commenced, as discussed further in Section 4.2.4 below.

4.2.3 Institutional Controls (ICs)

The PRA also included institutional controls. The purpose of the institutional controls is to ensure that the affected groundwater will not be used for any purpose until cleanup levels have been met; the hydrology of the Site is not adversely affected by the drilling or use of any wells at or near the Site; there is no disturbance to the waste left in place and the integrity of the cover is maintained. The PRA 100% Design and Demonstration of Compliance Plan (Beak and GeoSyntec, 1999) calls for implementation of institutional controls at the Site through the installation of fencing, other physical barriers and access controls, and land and groundwater use restrictions.

The ROD required fencing of the landfill to prevent access to contaminated media, and it indicated that the specific area requiring such fencing would be determined during the design of the remedial action. Subsequently, during the design, it was determined that

the fencing would not be installed around the entire site but only around the control box and the underground vault for the groundwater extraction system. This change was laid out in the Final Report for the Preferred Remedial Action 100% Design and Demonstration of Compliance Plan dated April 23, 1999 and subsequently approved by EPA via letter on April 29, 1999. Fencing was installed around these components in 2000 but was taken down in 2006 when construction work was done on the vault to upgrade the water-tight seal of the vault. The vault and electrical box are currently locked to prevent access to these components.

Given that the locks are preventing tampering with these components and the fact that erecting a fence would draw attention and perhaps entice trespassing and vandalism, EPA has decided to forgo this requirement. This decision will be documented on a supplemental CERCLA decision document and will be revised if the need arises.

Other physical barriers have been installed around active and accessible components of the PRA to discourage vandalism and tampering and provide protection to these components, as listed below.

- The control box and the underground vault for the extraction system are protected with lockable covers or doors. The infiltration gallery and extraction well have been protected by flush mount locking protective covers.

- Protective steel casings have been installed over all monitoring wells and are locked using heavy gauge padlocks (i.e., to withstand unauthorized access using bolt cutters).

- Shrubs have been planted around the soil gas vent pipes of the Landfill Gas venting system (see description below in Section 4.3).

- Boulders and sections of concrete pipe have been placed around the CTW monitoring well clusters.

There are no current exposures to the wastes or contaminated soils in the area of the PLC since these have been covered by one foot of clean material constituting the permeable landfill cover . This depth of cover material is sufficient for the PLC area's current use, as a permeably covered landfill subject to periodic inspections and maintenance. The PLC is vegetated with grass and has been observed to be in good condition without erosion or depression areas during numerous site inspections.

Pursuant to its zoning and land use authority, The City of Somersworth, a Working Settling Defendant (WSD) under the CD, has established a Groundwater Management Zone (GMZ) compliant with State groundwater standards. The boundaries of the GMZ are the boundaries presented on the GMZ Overlay Map included in the PRA 100% Design and Demonstration of Compliance Plan. The withdrawal of groundwater within the GMZ for any purpose is prohibited. In 2000, the City of Somersworth notified its residents of the groundwater use restrictions by publishing legal notices in area newspapers which described the restrictions and by posting these same notices at City Hall. In addition, the Somersworth City Council and Planning Board held separate and distinct public hearings with separate and distinct notifications prior to the adoption of the groundwater zoning restrictions. If the zoning ordinance is repealed or amended so that it no longer prohibits the withdrawal of groundwater within the GMZ, then other types of institutional controls will be implemented in accordance with the Statement of Work (SOW). A copy of Chapter 19, Section 10 of the City of Somersworth Zoning Ordinance is appended to this Five-Year Review Report as **Attachment F**, along with a copy of the GMZ Overlay Map.

Where access to land is required for monitoring, remedy construction or other response actions, land easements or access agreements will be used to the extent necessary, as identified in the PRA 100% Design and Demonstration of Compliance Plan. An easement has been obtained for extraction well BRW-1. Existing agreements obtained from various property owners to access existing monitoring wells for sampling and maintenance are being used throughout implementation of the PRA.

After the issuance of the first Five-Year Review Report, as an additional institutional control measure, EPA requested that the City of Somersworth send notification letters to all new property owners located in the GMZ explaining the existence of the GMZ and its restrictions on the use of groundwater. The notices are to be sent annually on or before April 30 until the remedy is complete. Also, every five years the City is required to send a similar GMZ notification letter to all property owners located within the GMZ until the remedy is complete. See **Attachment D** for a sample of the most recent letters to residents.

The ICs as set forth in the PRA have been implemented and are operating effectively by preventing groundwater exposure and in protecting the remedy. EPA also

will request, consistent with ROD requirements that the IC component of the remedy remains protective, that the City perform yearly compliance monitoring to certify that ICs remain in place and document any violations that may have occurred or enforcement actions that may have been taken. In addition, an evaluation of the recreational use of the Site will be conducted to determine whether additional ICs, which may include land use restrictions, are required to prevent potential future recreational exposure to Site contaminants. Any modification of the remedy would be addressed through a future CERCLA decision document.

4.2.4 Groundwater Monitoring

The Groundwater Monitoring Plan for the Site is described in the 2001 Sampling and Analysis Plan (SAP) (Geosyntec 2001a) and the updated 2010 SAP (Geosyntec 2010b). This Plan was prepared to satisfy the monitoring requirements identified in the SOW appended to the Consent Decree (CD). The groundwater monitoring network is shown in **Figure 3**.

The purpose of this monitoring plan is to document the progress of the groundwater remediation in both the overburden and bedrock, and to determine when the groundwater remediation has achieved the overall goals of the selected remedy. Groundwater remediation is required until the ICLs are achieved at and beyond the POC at the Site. The WSDs must eventually demonstrate that the ICLs have not been exceeded for a period of three consecutive years at every well at and beyond the POC using the evaluation procedure defined in 40 CFR 264.97.

The current monitoring program includes sampling selected wells once annually to evaluate whether the CTW and bedrock extraction well are meeting the ICLs. In addition, certain wells are sampled annually to evaluate natural attenuation processes beyond the POC and to evaluate the background conditions at the Site. The CTW is also hydraulically tested annually to evaluate any changes in flow conditions.

All groundwater monitoring results are reported to EPA and NHDES as part of the Annual Monitoring and Demonstration of Compliance Reports.

4.3 Landfill Gas (LFG) Venting Trench

Based on soil gas monitoring conducted in 2001 and 2002, the EPA and NHDES believed that additional actions, such as a LFG venting trench, were necessary to mitigate the potential for methane releases near the perimeter of the landfill. While this additional action was not specified as a requirement of the ROD or CD, a LFG venting trench was installed at the request of the EPA and NHDES in 2003 along the southern and eastern perimeter of the landfill as shown in **Figure 2**. The LFG venting trench is a passive system that prevents landfill gas from moving away from the landfill, posing a risk to abutting properties, and allows for methane gas to escape from the subsurface.

The LFG venting trench extends down to the seasonal low groundwater level. The trench is 3 feet wide with a total depth between approximately 15 feet in the southern segment to approximately 27 feet in the northern segment. It contains gravel (#57 stone) placed from the seasonal low groundwater table to a depth of 3 feet below ground surface. A vertical geomembrane extends down the outside wall of the trench (the wall located farthest from the landfill) to act as a barrier to soil gas migration. Above the gravel, a geotextile fabric separator, a 2.5 feet layer of compacted clay and a 0.5 foot layer of topsoil have been installed. The compacted clay is intended to limit infiltration of surface water while the geotextile separator prevents migration of sediment into the gravel filled portion of the trench.

The vent pipes are embedded vertically within the gravel and are 4 inches in diameter. The pipe in the gravel is slotted with 1/8-inch slots. The vent pipes extend 8 feet above ground surface and terminate with a wind driven turbine vent at the outlet.

Landfill gas monitoring is conducted on a regular basis and is reported as part of the Annual Monitoring and Demonstration of Compliance Reports. The installation and operation of the LFG venting system will be incorporated into the CERCLA remedy through a future CERCLA decision document.

4.4 System Operations/Operations and Maintenance (O&M)

All Operations and Maintenance (O&M) requirements of the preferred remedial action are described in the Operation and Maintenance Plan (GeoSyntec, 2004b). In

addition to the groundwater monitoring described in Section 4.2.4 above, O&M activities include:

- Hydraulic testing of the CTW;
- Inspections of the PLC, access roads, monitoring wells, soil gas probes, and LFG venting system;
- Repairs to damaged areas of the PLC, access roads, monitoring wells, soil gas probes and LFG venting system; and
- O&M of the bedrock groundwater extraction system components including the extraction well, extraction well pump, well vault, flow meter, piping and infiltration gallery.

The CTW is hydraulically tested annually to evaluate any changes in the condition of the CTW. Groundwater data is also used to evaluate whether the groundwater in the area at and beyond the POC complies with ICLs for a period of three consecutive years. At this stage in the operation of the CTW, it is too early to expect that VOC concentrations in groundwater (at and beyond the POC) will be below the ICLs at many of the wells, although some wells achieved compliance as of 2003.

In addition to the groundwater monitoring, soil gas samples are collected annually at the soil gas probes on the Site. Since the construction of the landfill gas venting trench, samples of the landfill gas and the air flow rate from the vent pipes have been collected at least annually.

The actual Operations, Maintenance and Monitoring (OM&M) costs from the beginning of 2005 to the end of 2009 have totaled approximately $850,000, including OM&M costs for the LFG venting trench of about $40,000.

5. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

This is the second Five-Year Review for the Somersworth Sanitary Landfill Superfund Site. The protectiveness statement from the first Five-Year Review read as follows:

The remedy is considered protective in the short-term; however in order for the remedy to be protective in the long-term, follow up actions need to be taken. Long-term

protectiveness will be achieved once additional notification of property owners within the Groundwater Management Zone (GMZ)is provided in accordance with current State requirements, newly installed shallow and bedrock monitoring wells are sampled to confirm a "clean edge" along the northern boundary of the GMZ, and the recent anomalies identified at the CTW, near the CTW-20 transect are more fully understood through the monitoring of new wells installed by the WSD in August 2005.

Since the first Five-Year Review in 2005, the following activities have been conducted or changes made in the monitoring activities:

- Steps were taken to address the issue raised in the first Five-Year review with respect to the CTW-20 transect (as discussed in Section 5.1 below) with additional wells installed in August 2005.

- Samples of sediment pore water and surface water in the wetland down-gradient of the CTW were collected in 2006 to confirm there were no significant concentrations of VOC present (as discussed in Section 5.2 below). No significant concentrations of VOCs were measured in pore water or surface water samples.

- Two new monitoring wells were installed in 2007 at the furthest extent of the GMZ to confirm that there are no significant concentrations of VOC in groundwater at these locations (as discussed in Section 5.3 below).

- At the request of the NHDES, additional groundwater parameters, including the Waste Management Division (WMD) Full List of VOCs including 1,4-dioxane, were analyzed for in 2009 (as discussed in Section 5.4 below). No new compounds of concern were identified from this list of compounds. A subset of the wells will be sampled and analyzed for these compounds again in 2010 and then once every five years in the year prior to future five-year reviews.

- Soil gas monitoring data collected prior to 2005 had demonstrated the effectiveness of the LFG venting system in reducing methane concentrations in soil gas in the area outside the landfill. One of the recommendations in the first Five-Year Review was to reduce the frequency of monitoring of the landfill gas probes. The frequency of monitoring of soil gas was reduced starting in 2006.

- Groundwater and soil gas samples were collected three times per year in 2005, 2006 and 2007.

- In 2007, all groundwater data collected at the Site to date was evaluated using the Monitoring and Remediation Optimization System (MAROS) software developed for the Air Force Center for Environmental Excellence (AFCEE) to support the recommendation that groundwater sampling be reduced to once per year. In 2008 groundwater samples were collected in the spring and the fall to allow the EPA sufficient time to evaluate and approve the recommendations from the MAROS software. Starting in 2009 groundwater and soil gas samples were collected on an annual basis in the fall.

5.1 Evaluate the CTW Performance Around the CTW 20 Transect

Monitoring data from groundwater samples collected from two of the three monitoring transects (i.e., CTW-30 and CTW-40) demonstrate that the CTW performance is meeting the compliance requirement of reducing CEs to the ICLs as groundwater passes through the CTW. The cis-1,2-DCE and VC data from monitoring transect CTW-20, however, suggested an anomaly in 4 of the 28 sampling events between February 2001 and November 2009. Higher than anticipated concentrations of cis-1,2-DCE and VC were reported in samples collected from the shallow down-gradient monitoring well within the CTW (CTW-23U) in April 2004, July 2004, April 2005 and April 2008. No significant anomalies were observed in samples collected in 2001, 2002, 2003, October 2004, May 2005, August 2005, October 2005, 2006, 2007, November 2008, and 2009 with no detectable or only trace concentrations of VC and cis-1,2-DCE for both shallow down-gradient monitoring well (CTW-23U) and deep down-gradient monitoring well (CTW-23L).

Additional groundwater monitoring indicated that the elevated concentrations of CEs at the CTW-20 Transect which were observed in April 2004, July 2004, April 2005 and April 2008 are isolated to a small area in the immediate vicinity of the CTW-20 transect location. However, the cause for the elevated concentrations on the down-gradient side of the CTW at the CTW-20 transect remains unclear and continues to be evaluated. In order to further evaluate the CTW performance around the CTW-20 transect, an additional well (CTW-24U) was installed in August 2005 in the upper

portion of the overburden about three feet down-gradient of the CTW-20 transect (**Figure 3**).

A new transect of monitoring wells, CTW-60, was installed in August 2005 approximately 40 feet to the southwest of the CTW-20 transect (**Figure 3**). This transect consists of one well installed in the upper portion of the overburden about five feet up-gradient of the CTW and one well installed in the upper portion of the overburden about three feet down-gradient of the CTW.

In addition to the data collected from the new wells described above, data collected for the annual performance monitoring at the Site was also used to help understand the groundwater data from the CTW-20 transect. This data included groundwater elevation data, groundwater chemistry data from wells around the CTW-20 transect and hydraulic testing data from the CTW.

Data collected in 2009 continues to support the hypothesis that small changes in groundwater flow direction or groundwater elevations may cause groundwater with higher concentrations of cDCE and VC to shift to the north and intersect the CTW-20 transect on a periodic basis. During periods of time when groundwater with higher concentration of cDCE and VC intersects the CTW-20 transect, the concentrations of cDCE and VC in the shallow monitoring wells on the down-gradient side of the CTW (CTW-23U and CTW-24U) contain >ICL concentrations of cDCE and VC. These excursions are infrequent and short in duration and do not appear to have significant impacts on the groundwater concentrations down-gradient of the CTW. Data collected in 2009 from the CTW-60 transect supports data collected in 2004 and 2006 that demonstrate that the CTW is capable of treating the groundwater with higher concentration of cDCE and VC when it intersects the CTW at other locations. Monitoring of groundwater will be conducted on an ongoing basis to determine if the anomaly observed periodically at CTW-20 is impacting water down-gradient of the CTW in a significant way.

5.2 Evaluate the Surface Water and Pore Water Concentrations in Peters Marsh Brook.

Surface water and pore water sampling was conducted in 2006 at six locations in the wetland down-gradient of the CTW to fulfill EPA and NHDES request to determine

whether intermediate de-chlorination products are being discharged to the surface water such that chlorinated ethenes (CEs) are present in surface water at concentrations above the surface water standards per New Hampshire Rule [Env.–Ws 1700[6]]. The measured concentrations of VOCs in surface water samples were compared with historical surface water data and pore water sample results were compared with the groundwater water standards per New Hampshire Rule [Env.–Wm 1403[7]]. No VOCs were detected in surface water or pore water samples and as such, it meets the standards per New Hampshire Rule [Env.–Ws 1700[8]] and New Hampshire Rule [Env.–Wm 1403[9]].

5.3 New GMZ Wells

At the request of EPA and NHDES, two new monitoring wells were installed near the northern extent of the GMZ in early 2007 to replace monitoring well OB-18U, which had been abandoned in 2001. The two new wells, OB-101U and OB-101R, were installed to allow monitoring of the overburden and bedrock groundwater near the northwest corner of the GMZ (**Figure 3**). No VOCs have been detected in these wells since they were installed in 2007.

5.4 NHDES Additional Groundwater Analysis

In 2009, NHDES Waste Management Division (WMD) required the analysis of groundwater from the Site for compounds on their "Full List of Analytes for Volatile Organics" (Full List). The monitoring plan for the Site for 2009 and 2010 was modified to comply with the NHDES request. Ten wells (OB-101U, OB-101R, OB-7R, OB-16U, OB-17U, OB-24R, CTW-21U, CTW-24U, CTW-41U and B-6R) were sampled and analyzed for the Full List of compounds in addition to the analysis previously conducted

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[6] This is the regulatory standard cited in the ROD, however N.H. has revised its regulatory structure in 2008 and promulgated surface water quality standards are now found at Env-Wq 1700. A future CERCLA decision document will be issued to revise the ARARs standards that were cited in the ROD with current regulatory standards.

[7] This is the regulatory standard cited in the ROD, however N.H. has revised its regulatory structure in 2007 and promulgated ambient groundwater quality standards are now found at Env-Or 603.03. A future CERCLA decision document will be issued to revise the ARARs standards that were cited in the ROD with current regulatory standards.

[8] See note 3.

[9] See note 4.

at the Site. The ten wells selected for analysis cover near source and down-gradient wells, and both bedrock and overburden wells (**Figure 3**).

No compounds were detected at concentrations above the NH DES ambient groundwater quality standards during the first round of sampling and analysis conducted in 2009 of the Full List of VOCs, therefore, there are no indications of a requirement to change the routine VOC monitoring program for the Site. As per the agreed upon sampling plan for these compounds, the ten wells will be sampled and analyzed for the Full List again in the fall of 2010. If 1,4-dioxane is again non-detect for all wells in 2010, this compound will no longer be analyzed for at the Site.[10] All other compounds on the Full List will be sampled and analyzed for at the ten wells once during each Five-Year Review period.

As indicated in the ROD, low-flow sampling for inorganics is also needed to accurately represent concentrations in groundwater. Please refer to Section 8 for further discussion of this issue.

6. FIVE-YEAR REVIEW PROCESS

6.1 Administrative Components

In 2009, EPA notified the WSD that a five-year review was required at the Site to review the remedy and determine whether it remains protective of human health and the environment. EPA requested that the WSD produce a draft of the Five-Year Review Report under the terms of the CD, and that EPA would finalize the Five-Year Review Report following receipt of their draft report. Accordingly, the WSD submitted to EPA a draft Five-Year Review Report in June 2010.

Subsequently, the EPA Remedial Project Manager, Gerardo Millán-Ramos reviewed and revised the draft report and shared it with all members of the Review Team for their review and comments. The Review Team members were:

David Peterson, Esq., Attorney	U.S. EPA Region 1
Rudy Brown, Community Involvement Coordinator	U.S. EPA Region 1

[10] NHDES may require 1,4-Dioxane at the time of site closure determination as a confirmatory measure.

Margaret McDonough, Risk Assessor	U.S. EPA Region 1
Steve Mangion, Hydrogeologist	U.S. EPA Region 1
Charlie Porfert, QA/QC Chemist	U.S. EPA Region 1
Joseph Donovan, Project Manager	NH DES
Dennis Pinski, Risk Assessor	NH DOH

The Final Somersworth Sanitary Landfill Superfund Site Second Five-Year Review Report was completed by Gerardo Millán-Ramos, the EPA Remedial Project Manager, and Joseph Donovan, NHDES Remedial Project Manager.

6.2 Community Involvement

A notice of the start of this Five-Year Review was published on February 5, 2010 at the Fosters Daily Democrat local newspaper. See **Attachment E** for a copy of the initiation notice. Copies of the Second Five-Year Review Report are being sent to the City of Somersworth and will be placed in the information repositories, including the Somersworth City Hall. A press release will also be issued by EPA announcing the findings of this review and the availability of this report.

6.3 Document Review

This Five-Year Review consisted of a review of relevant documents including, but not limited to, the 1994 ROD, the Sampling and Analysis and Operations and Maintenance Plans, Annual reports (including all monitoring data) produced by the WSD, the Groundwater Protection District Zoning Ordinance, and Applicable and Relevant or Appropriate Requirements (ARARs). The specific documents reviewed are listed in **Attachment A**.

6.4 Data Review

Review of records and monitoring reports covering sampling results through August 2010 indicated that the remedy is performing substantially as designed. Specific observations from the monitoring of groundwater, soil gas, and the implementation of institutional controls at the Site are presented below:

Groundwater Monitoring

- The hydraulic testing, geochemical and biomass data are within the ranges expected in a zero-valent iron CTW and do not indicate any significant levels of precipitation or biofouling within the CTW.

- Overall, measured vertical gradients, calculated water table mounding, measured groundwater VOC concentrations, and groundwater flux calculations show no evidence of >ICL groundwater being diverted around or beneath the CTW, except for insubstantial amounts of such groundwater.

- The analytical and water level data collected since operation of the groundwater extraction system began at BRW-1, are consistent with the design criteria set forth in the 100% Design Report so there are no indications at this point suggesting that additional bedrock groundwater extraction is warranted. Continued monitoring will be used to evaluate if there is a need for additional bedrock groundwater extraction at the Site in the future.

- The VOC concentration trends down-gradient of the POC indicate that natural attenuation processes are ongoing at the Site **(See Figures 4 and 5 and Table 2)**[11]. It is unclear at this time whether the remedy is expected to meet groundwater cleanup standards in the timeframe specified in the ROD (within 55 years from completion of the selected remedy's source control component, i.e. June 6, 2056). However there are multiple lines of evidence showing that natural attenuation processes are occurring on-site and that the CTW is effectively and consistently reducing chlorinated ethenes at all of its transects except the CTW-20 transect which has shown the intermittent anomalies previously described in section 5.1.

[11] These figures show average yearly concentrations to help visualize general trends. As such they must be carefully interpreted and are not intended to substitute the concentration trends observed at each monitoring well. Table 2 shows the wells used to calculate these trends.

Table 2: List of wells used to calculate yearly Mean VOCs

Overburden Monitoring Wells at or beyond the POC	*Bedrock Monitoring Wells*
CTW-24U	B-6R
CTW-63U	B-8R
B2-L	B-9R
B8-L	B-13R
CTW-10U	OB-4R
CTW-50U	OB-5R
FS-4	OB-6R
FS-7	OB-101R
FS-9A	PS-1R
OB-4U	
OB-5U	
OB6-U	
OB-101U	
B-13WT	

- The concentrations of VOC in some of the compliance wells down-gradient of the CTW have not yet been reduced below ICLs. At this stage in the operation of the CTW, it is still too early to expect that VOC concentrations in groundwater beyond the CTW will be below the ICLs at many of the wells. However, wells B-13WT, OB-4U and R, and OB-6R have achieved compliance. Other wells have demonstrated compliance (several of the CTW transect wells, CTW-10U and OB-7U and R) but monitoring of these wells will be continued to address monitoring objectives related to performance of the CTW (CTW transect wells and CTW-10U)

and the potential for VOCs to migrate onto the Site (background wells OB-7U and R). See **Attachment B** for historical groundwater data.

- VOCs continue to be present in the landfill waste, as indicated by the presence of >ICL groundwater at wells OB-16U and OB-17U.
- A preliminary screening for vapor intrusion following the EPA and IRTC guidance documents[12], revealed a potential for vapor intrusion to exist near residences in the vicinity of well B-12R. The TCE screening level used by EPA is 2.9 µg/L and well B-12R showed 580 µg/L TCE during the November 2009 sampling event. However the historical groundwater data suggests that a clean water lens exists in the overburden above well B-12R which is likely acting as a barrier between the contaminated bedrock aquifer and the surface soils. According to the well boring logs for wells B-12R, OB-9R, OB-22R, OB-23R (bedrock wells closest to the extraction well, all of them along Blackwater Road and up-gradient from the landfill), bedrock was encountered at 16.5 ft. bgs, 17.0 ft. bgs, 20.2 ft. bgs, and 11.7 feet bgs respectively. The historical data for wells B12-L, and B13-WT (overburden wells closest to the extraction well, all of them along Blackwater Road and up-gradient from the landfill) shows non-detects for all the COCs. There is approximately 900 feet between these two wells. This data is limited to a few overburden wells (B-12L and B-13WT) and additional data needs to be collected to confirm the existence of this clean water lens and rule out any concerns for vapor intrusion (See **Figure 6** and **Attachment I** for more details). Additionally, there is soil gas data from two soil gas probes (SGP-09 and SGP-10) located within approximately 100 feet from the extraction well, which shows trace amounts of Total VOCs, Methane, Carbon Dioxide, and Hydrogen Sulfide. These negligible levels also suggest the presence of a clean lens of overburden groundwater (See **Table 6** on **Attachment I** for a list of these readings during the last five years).
- Other specific results and observations regarding groundwater were previously discussed in Sections 5.1 to 5.4.

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[12] OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) November 2002 EPA530-D-02-004
ITRC (Interstate Technology & Regulatory Council). 2007. *Vapor Intrusion Pathway: A Practical Guideline.* VI-1. Washington, D.C.: Interstate Technology & Regulatory Council, Vapor Intrusion Team. www.itrcweb.org.

Landfill Gas Monitoring

- Methane concentrations measured in soil gas probes before and after the installation of the LFG venting system indicate that the system is performing as designed and cutting off the migration of landfill gases out from the landfill.

- The total emissions of VOCs from the LFG venting system pipes has been estimated to be 13 pounds per year which is considered to be an insignificant amount.[13]

Institutional Controls

A review of the physical barriers (e.g., fencing) and administrative institutional controls implemented at the Site to date has determined that measures to prevent exposure to groundwater and to prevent damage to components of the remedy have been implemented. Although there are no current human exposures to users of the recreational area on the eastern portion of the property or to trespassers potentially going into the area covered by the PLC (see Section 4.2.3 above), the unrestricted access to these two areas and the interest the City has shown in re-developing the PLC area for recreational use (e.g. Soccer fields), highlights the potential need for additional institutional controls to ensure the integrity of the PLC and avoid potential future exposure of recreational users throughout the entire former landfill area to Site contaminants.

One example of such institutional control would be the a requirement, as part of a land use restriction, for the submittal of a Soil Management Plan to ensure that any intrusive work (digging holes, etc.) does not dig up contaminated soil or expose landfill material. The need for any additional remedial measures, including Institutional Controls, to address potential future risks from the recreational use of the entire Site will be evaluated and potentially addressed in a future CERCLA decision document.

6.5 Site Inspection

Representatives of EPA and NHDES conducted site inspections on June 9, 2010 and June 29, 2010. During the June 9 site inspection the components of the remedy

[13] NH DES regulates VOC emissions on tons per year rate, not lbs per year, hence it was deemed insignificant.

(infiltration gallery, extraction well vault, extraction well, CTW wells and PLC) were observed. Security deficiencies were noted in several of the components and were communicated via letter to the WSDs on June 17, 2010. (See copy of letter on **Attachment G**).

A second site inspection done as part of the Five-Year Review (June 29, 2010) focused on visually checking the boundaries of the GMZ, and interviewing an adjacent resident and the City's project manager. At this time most of the deficiencies noted during the June 9 inspection were observed to be properly addressed.

In addition to these inspections, the City of Somersworth consultants have performed numerous inspections of the Site as part of their routine monitoring and O&M activities each year.

6.6 Interviews

Interviews were conducted as part of this Five-Year Review during the June 29 site inspection to Mr. Norm LeClerc, Site Manager for the City of Somersworth and Mrs. Margaret Aikens, adjacent resident to the Site. Also a telephone interview was conducted on July 22 to Mr. Joseph Donovan, NHDES Project Manager. No major issues were identified during these interviews. Please see **Attachment C** for an interview record that includes detailed summaries of the conversations.

7. TECHNICAL ASSESSMENT

7.1 Is the remedy functioning as intended by the decision documents?

Yes, the remedy is functioning as intended by the decision documents. The review of documents, ARARs, risk assumptions and the results of the Site inspections indicate that the groundwater components of the remedy are functioning substantially as intended by the ROD. The CTW is providing flow-through treatment of contaminated groundwater. The PLC constructed over the approximately 16 acres of the western portion of the landfill, is stable and has achieved the remedial objective of preventing contact with the landfill wastes while allowing the flushing of the waste management area. The effective implementation of institutional controls has prevented exposure to, or ingestion of, contaminated groundwater.

Based on existing data, there are multiple lines of evidence showing that MNA is occurring on-site and that the CTW is effectively and consistently reducing chlorinated ethenes at all of its transects except the CTW-20 transect which has shown the intermittent anomalies previously described in section 5.1. Nonetheless it remains uncertain whether the MNA component of the remedy beyond the CTW will meet groundwater cleanup standards in the timeframe specified in the ROD. Therefore, continued groundwater monitoring is critical for this evaluation to be completed.

The bedrock groundwater extraction system generally continues to operate within the design parameters that were approved when the system became operational in November 2001. Periodic maintenance is essential to ensure that the system continues to extract contaminated groundwater south of the waste management area.

Risks posed to users of the existing and proposed recreational facilities, from potential air and soil contact exposures were evaluated by a Screening Level Risk Assessment performed on September 14, 2006 by Geosyntec Consultants. This risk assessment evaluated potential health risk to users of the proposed recreational facilities as well as users of the existing ones for a number of potential exposure pathways[14]. The exposure pathways evaluated for these receptors (users) were the direct contact with VOC containing soils at the permeable landfill cover (PLC) and the inhalation of VOCs from landfill gas migrating through the PLC or vented via the landfill gas (LFG) venting trench. It did not identify unacceptable risks for recreational users from any of these pathways. EPA and NHDES favorably reviewed the assessment and provided guidance on additional requirements to safeguard the health and safety of patrons should the proposed activities be pursued. Subsequently the City of Somersworth aborted the redevelopment plans due to cost limitations, but the regulatory agencies did reiterate standards, based on the CERCLA remedy, that needed to be met for active recreation to be permitted on the PLC area of the landfill (See copy of letter on A**ttachment H**).

Given the ongoing recreational use of the Site and its potential future expansion, the CERCLA remedy needs to be modified to include a full assessment of recreation use of the Site and to identify what additional remedial measures may be required to address potential future direct exposure of recreational users to Site contaminants.

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[14] Pathways pertaining to potential risks from covered landfill material/contaminated soils in the eastern portion of the landfill that is being used as an active recreation area was not evaluated as part of this study.

7.2 Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection still valid?

No, some of the exposure assumptions and toxicity data used at the time of the remedy selection are no longer valid. Namely, no exposures to landfill gas, or exposures to VOCs in soils were considered in the ROD. Also, the toxicity data for six of the eight COCs changed as shown below.

Cancer Slope Factor Changes

Chemical	Cancer Slope – ROD	Cancer Slope Current
Benzene	2.9E-02	5.5E-02
1,2 DCE	6E-01	NA
Tetrachloroethylene	5.2E-02	5.4E-01
Trichloroethylene	1.1E-02	5.9E-03
Vinyl Chloride	1.9E-01	7.2E-01

Reference Dose Changes

Chemical	Reference Dose – ROD	Reference Dose Current
1,1 DCE	NA	5E-02

However, since the cleanup level was set at the MCL and the MCL has not changed for any of these contaminants, there is no effect on the cleanup level. Results of future sampling of inorganics will be assessed using current toxicity information and Applicable or Relevant and Appropriate Requirements and/or To Be Considered Requirements (ARARs/TBCs).

There have been no changes in groundwater use that would affect the protectiveness of the groundwater components of the remedy. However, the ROD did not evaluate potential risks posed by landfill gas, or risks to recreational users. Measures have been taken to address these potential risks (i.e. landfill gas venting

trench and landfill gas monitoring, and Screening Level Risk Assessment for a limited number of exposure pathways for recreational users) however they need to be formally incorporated into the remedy and an additional assessment of the recreational use is needed to evaluate the protectiveness of the remedy for all potential recreational exposure pathways.

7.3 Has any other information come to light that could call into question the protectiveness of the remedy?

No. No information has arisen that would call into question the protectiveness of the remedy.

8. ISSUES

Based on the data review the following issues have been identified:

Table 3: Issues

Issue	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1. Measures taken to control landfill gas emissions, to address potential future risk posed to recreational users, regulatory changes to ARARs, and land use restrictions for soil/landfill material are not presently incorporated into the CERCLA remedy.	N	Y
2. Additional overburden groundwater data is necessary to confirm that the vapor intrusion (VI) exposure pathway to residents near well B-12R, is not complete.	N	Y
3. The ROD required that appropriate low-flow data for inorganics in groundwater be collected during the remedy, however this data is still outstanding.	N	Y

4. Available records indicate that the City reclaimed area was capped with an adequate amount of fill materials, and that surface soil was characterized. However the actual reports and data have not been located to confirm that there are no potential risks to future recreational users of the Site.	N	Y

9. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

The following recommendations have been made based on the data review for the Site:

Table 4: Recommendations and Follow-up Actions

Issue	Recommendations and Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
1.	Incorporate measures taken to: a) control landfill gas emissions, b) address potential future risk posed to recreational users, c) regulatory changes to ARARs, and d) land use restrictions for soil/landfill material, into the remedy through a supplemental CERCLA decision document.	Working Settling Defendants; EPA	EPA	03/30/2012	N	Y
2.	Collect additional overburden groundwater data and any other necessary information to confirm that the VI exposure pathway for residents near well B-12R, is not complete.	Working Settling Defendants	EPA & NHDES	9/30/2011	N	Y
3.	Conduct groundwater sampling for inorganics to confirm that representative concentrations are consistent with background concentrations.	Working Settling Defendants	EPA & NHDES	9/30/2011	N	Y

4.	Examine the reports and data that characterize the nature and depth of the materials capping the City reclaimed area. If these reports can not be obtained, or the data is deemed insufficient, then conduct further evaluations to confirm there are no potential risks to future recreational users of the Site.	Working Settling Defendants	EPA & NHDES	9/30/2011	N	Y

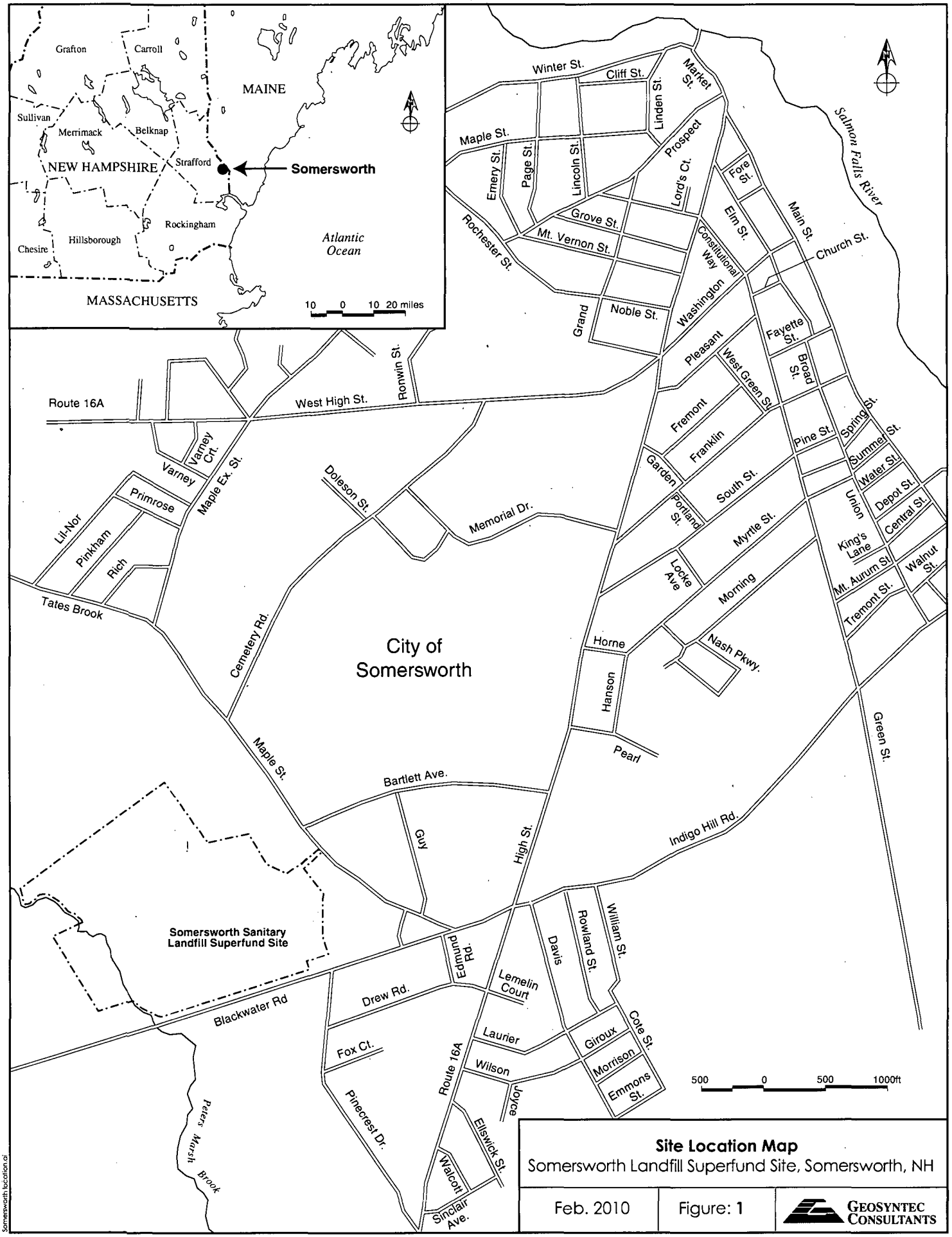
10. PROTECTIVENESS STATEMENT

The remedy is considered protective in the short-term because groundwater institutional controls are in place, landfill gas control measures have been implemented, and sufficient cover is present on top of the landfill and around recreational areas of the Site to prevent exposure to contaminated media. In order to be protective in the long-term, the follow-up actions listed in this Five-Year Review need to be taken, groundwater cleanup goals must be attained as specified in the ROD, and final closure of the landfill must be completed.

11. NEXT REVIEW

The next Five-Year Review for the Somersworth Sanitary Landfill Superfund Site is required five years from the signature date of this review.

FIGURES



Site Location Map

Somersworth Landfill Superfund Site, Somersworth, NH

Feb. 2010	Figure: 1	GEOSYNTEC CONSULTANTS

Somersworth location.ai

Boundary of Groundwater Management Zone
Chemical treatment wall (CTW)
Landfill gas venting trench
City of Somersworth property boundary
Approximate extent of waste area
Point of Compliance

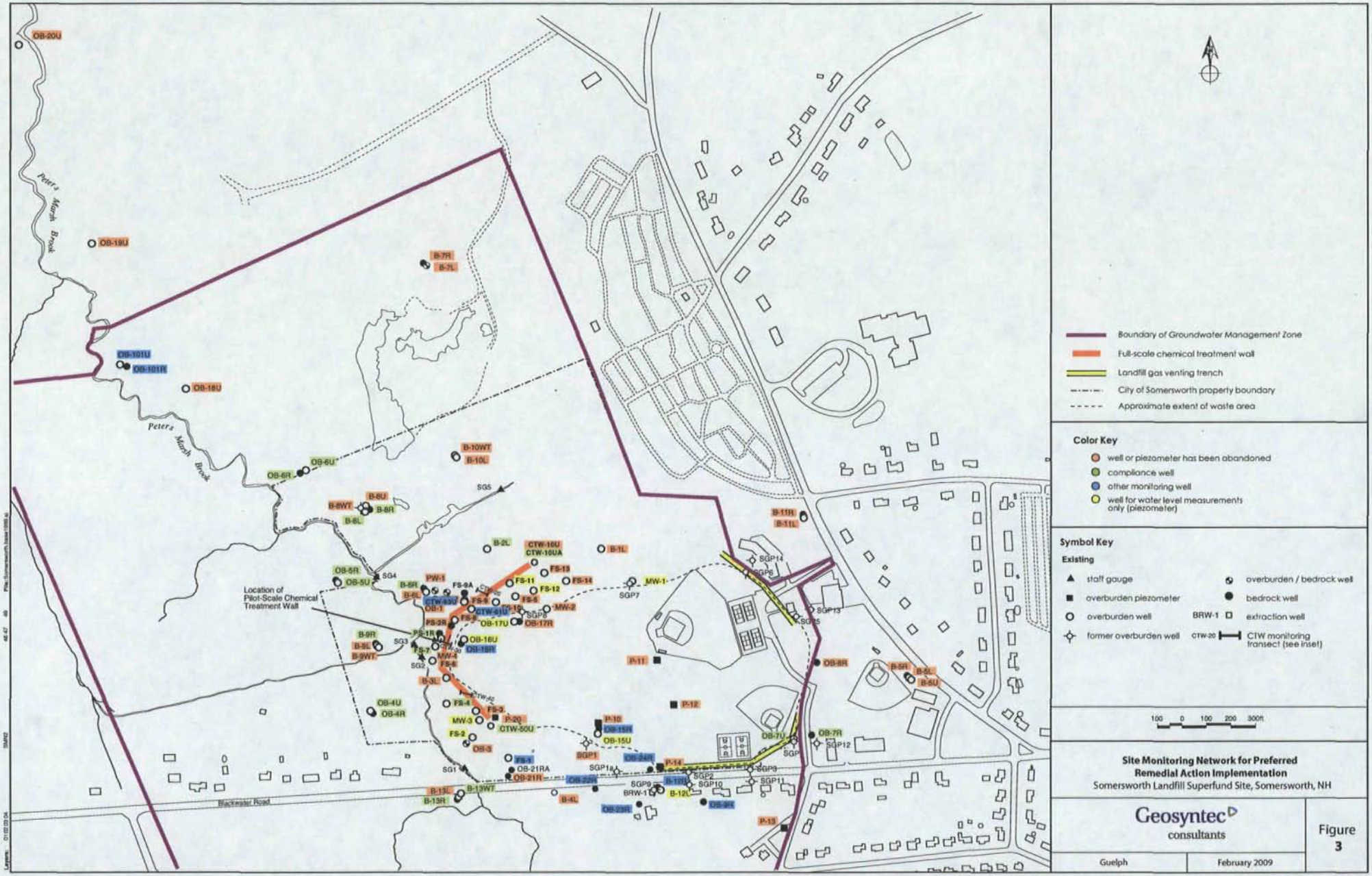
100 0 100 200 300ft

Site Layout
Somersworth Landfill Superfund Site, Somersworth, NH

Geosyntec consultants

Guelph | March 2010

Figure 2

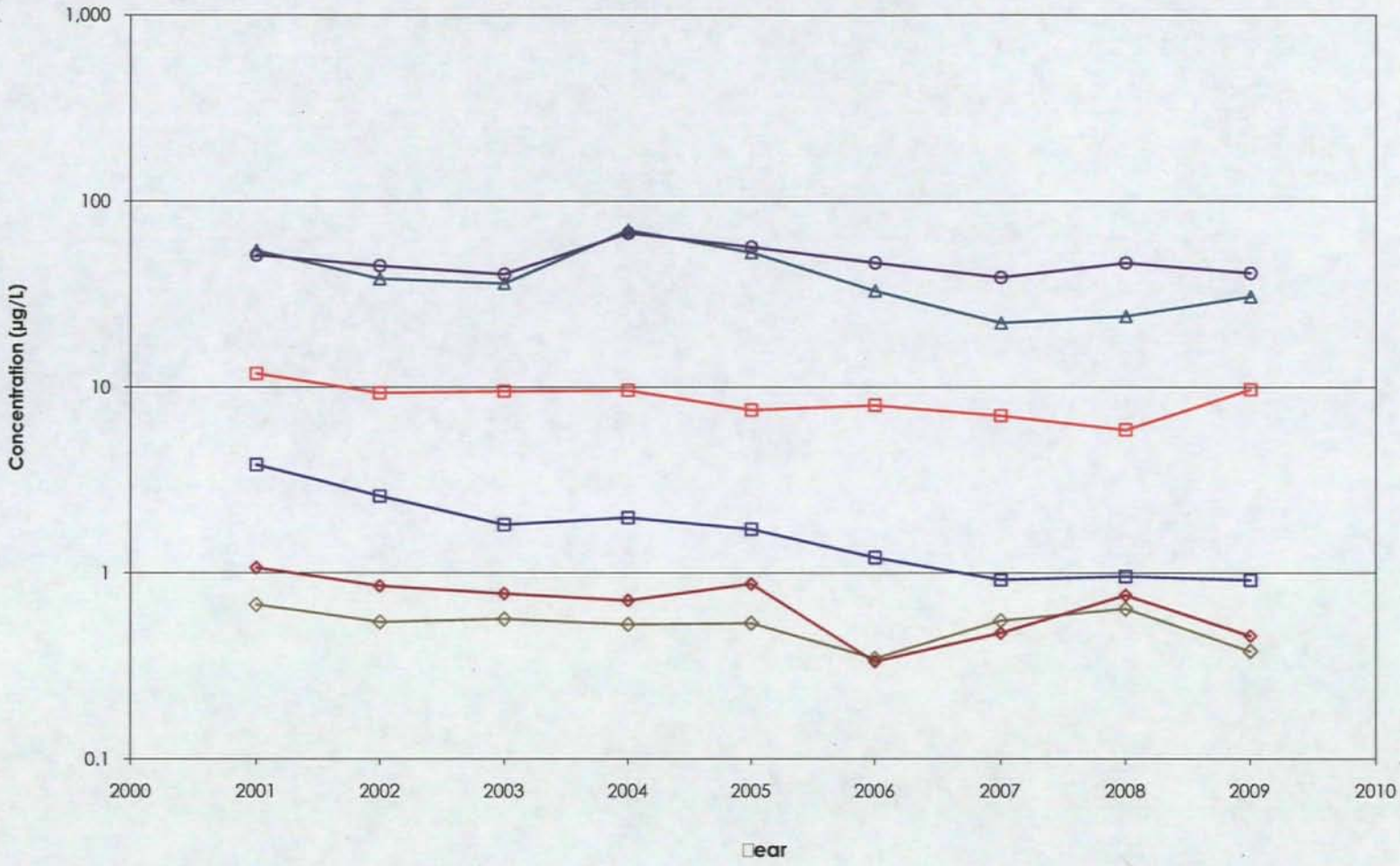


Site Monitoring Network for Preferred Remedial Action Implementation
Somersworth Landfill Superfund Site, Somersworth, NH

Geosyntec consultants

Guelph | February 2009

Figure 3



Yearly Mean VOC Concentrations - Overburden

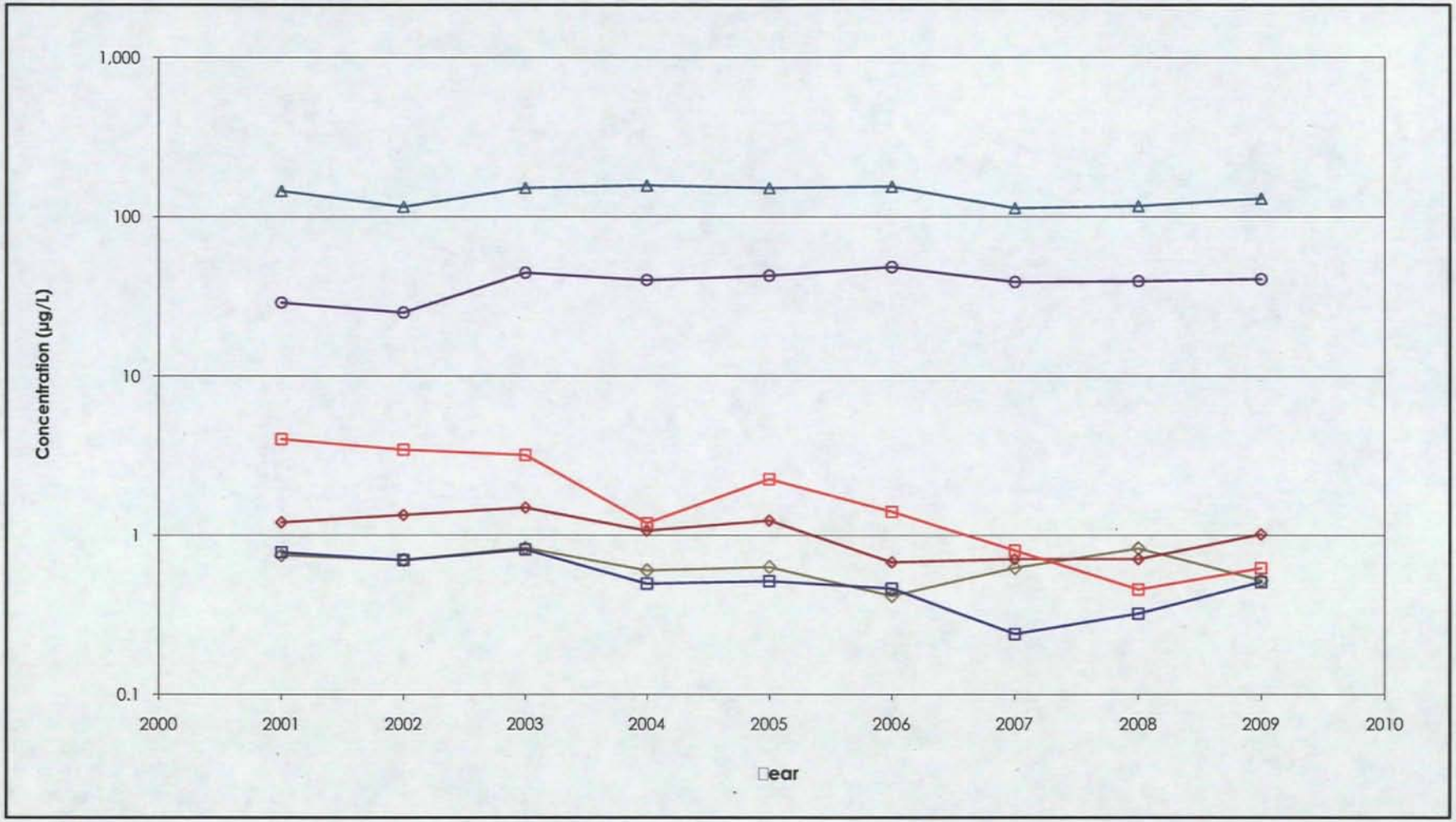
Somersworth Landfill Superfund Site, Somersworth, NH

Geosyntec consultants

Figure 4

Guelph | 4-Aug-2010

\\Guelph-01\Data\VM\Projects\TR0357 Somersworth II\Somersworth\Data\data&GIS\Somersworth - Yearly Mean Graphs.xls]Overburden



1,1-Dichloroethene
cis-1,2-Dichloroethene
Tetrachloroethene
trans-1,2-Dichloroethene
Trichloroethene
Vinyl chloride

Yearly Mean VOC Concentrations - Bedrock

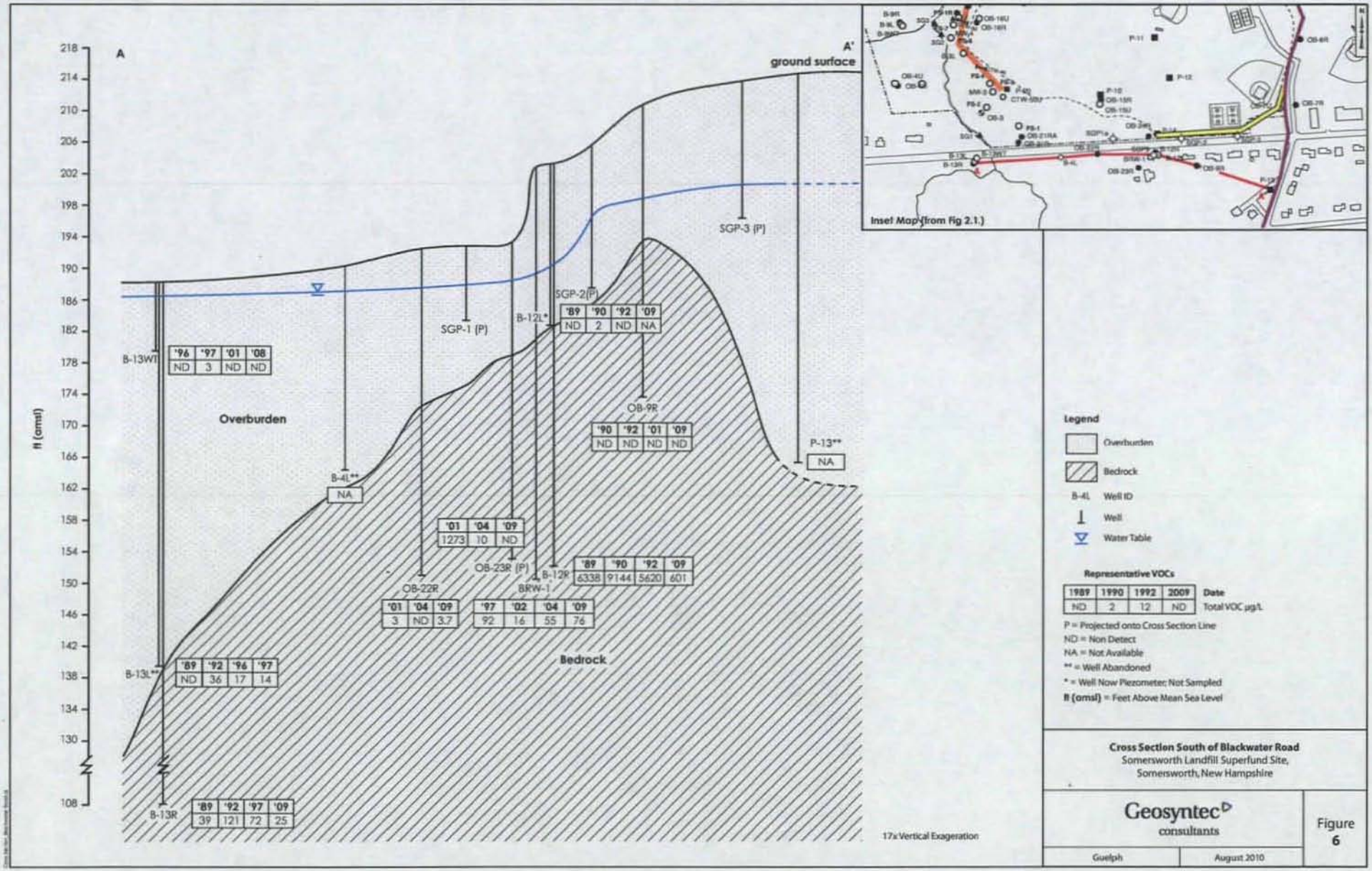
Somersworth Landfill Superfund Site, Somersworth, NH

Geosyntec consultants

Figure 5

Guelph | 4-Aug-2010

\\Guelph-01\Data\PEJ\Projects\180587 Somersworth FS\Somersworth Databases&GIS\Somersworth - Yearly Mean Graphs.xls]Bedrock



Cross Section South of Blackwater Road
Somersworth Landfill Superfund Site,
Somersworth, New Hampshire

Geosyntec consultants

Guelph | August 2010

Figure 6

ATTACHMENT A

LIST OF DOCUMENTS REVIEWED

LIST OF DOCUMENTS REVIEWED

Beak International Incorporated (Beak). 1998. Design Investigation Report for the Pilot Study and Site Groundwater Monitoring Program. Remedial Design for Preferred Remedial Action at the Somersworth Sanitary Landfill Superfund Site, New Hampshire. Draft Report. July 1998.

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United States Environmental Protection Agency New England (Region I). 1994. Record of Decision, Somersworth Sanitary Landfill Superfund Site.

United States Environmental Protection Agency New England (Region I). 1995. Consent Decree for Remedial Design/Remedial Action at the Somersworth Sanitary Landfill Superfund Site, Somersworth, New Hampshire.

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United States Environmental Protection Agency OSRTI. 2009a. Final Report: Technical Assistance for the Somersworth Sanitary Landfill Superfund Site, Somersworth, New Hampshire.

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ATTACHMENT B

TABLE 2.3 FROM 2009 ANNUAL REPORT

TABLE 2.3
GROUNDWATER DATA FOR OBJECTIVE 1A - EVALUATE GROUNDWATER PASSING THROUGH CTW
Somersworth Sanitary Landfill Superfund Site, New Hampshire

Well ID	Date Sampled	QA/QC Sample Type	1,1-DCE 7* ((µg/L)	cis-DCE 70* (µg/L)	trans-DCE 100* (µg/L)	PCE 5* (µg/L)	TCE 5* (µg/L)	VC 2* (µg/L)
CTW-33U	20-Oct-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Oct-04	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-May-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Aug-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-05	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	13-Apr-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	7-Jul-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Oct-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Apr-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	1-Aug-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Oct-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	6-Nov-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	3-Nov-09	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
Mean 2001			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*2.1*
Mean 2002			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*0.79*
Mean 2003			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*0.79*
Mean 2004			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*0.50*
Mean 2005			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*0.50*
Mean 2006			*0.27*	*0.23*	*0.26*	*0.30*	*0.15*	*0.41*
Mean 2007			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.44*
Mean 2008			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.44*
Mean 2009			*0.31*	*0.33*	*0.32*	*0.35*	*0.40*	*0.33*
CTW-43L	28-Mar-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Apr-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Jul-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Apr-02	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Apr-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Jul-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	16-Oct-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	7.2
	21-Apr-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-03	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Jul-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	15-Oct-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	15-Oct-03	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Apr-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Jul-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Oct-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-May-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Aug-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	18-Oct-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	14-Apr-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	27-Jul-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	27-Jul-06	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Oct-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Apr-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	31-Jul-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Oct-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Apr-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	6-Nov-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	2-Nov-09	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Mean 2001			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*0.79*
Mean 2002			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*2.9*
Mean 2003			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*0.79*
Mean 2004			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*0.50*
Mean 2005			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*0.50*
Mean 2006			*0.27*	*0.23*	*0.26*	*0.30*	*0.15*	*0.41*
Mean 2007			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.44*
Mean 2008			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.44*
Mean 2009			*0.31*	*0.33*	*0.32*	*0.35*	*0.40*	*0.33*
CTW-43U	28-Mar-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Apr-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Jul-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Apr-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Jul-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U

TABLE 2.3
GROUNDWATER DATA FOR OBJECTIVE 1A - EVALUATE GROUNDWATER PASSING THROUGH CTW
Somersworth Sanitary Landfill Superfund Site, New Hampshire

Well ID	Date Sampled	QA/QC Sample Type	1,1-DCE 7* ((µg/L)	cis-DCE 70* (µg/L)	trans-DCE 100* (µg/L)	PCE 5* (µg/L)	TCE 5* (µg/L)	VC 2* (µg/L)
CTW-24U	22-Aug-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.4
	17-Oct-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.1
	14-Apr-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.8
	6-Jul-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	3.4
	23-Oct-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Apr-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.1
	31-Jul-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Oct-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-08	--	5.0 U	70	5.9	5.0 U	5.0 U	72
	6-Nov-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	27-Apr-09	Field Duplicate	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.7
	27-Apr-09	--	1.0 U	1.0 U	1.3	1.0 U	1.0 U	1.0 U
	3-Nov-09	--	5.0 U	0.33 J	1.3 J	5.0 U	0.35 J	2.0 U
Mean 2005			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*3.8*
Mean 2006			*0.27*	*0.23*	*0.26*	*0.30*	*0.15*	*2.2*
Mean 2007			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.99*
Mean 2008			*0.49*	*35*	*3.2*	*0.19*	*0.27*	*36*
Mean 2009			*0.31*	*0.33*	*1.1*	*0.35*	*0.37*	*0.92*
CTW-33L	28-Mar-01	Field Duplicate	5.0 U	8.6	5.0 U	5.0 U	5.0 U	8.3
	28-Mar-01	--	5.0 U	8.8	5.0 U	5.0 U	5.0 U	8.7
	25-Apr-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.5
	17-Jul-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.1
	17-Oct-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Apr-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Jul-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	15-Oct-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Jul-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	15-Oct-03	--	5.0 U	5.4	5.0 U	5.0 U	5.0 U	3.8
	20-Apr-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Jul-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	19-Oct-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-May-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Aug-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	18-Oct-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	13-Apr-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0
	7-Jul-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Oct-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Apr-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	1-Aug-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Oct-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	6-Nov-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	3-Nov-09	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
Mean 2001			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*1.8*
Mean 2002			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*0.79*
Mean 2003			*0.48*	*2.2*	*0.57*	*0.50*	*0.54*	*1.8*
Mean 2004			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*0.50*
Mean 2005			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*0.50*
Mean 2006			*0.27*	*0.23*	*0.26*	*0.30*	*0.15*	*0.94*
Mean 2007			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.44*
Mean 2008			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.44*
Mean 2009			*0.31*	*0.33*	*0.32*	*0.35*	*0.40*	*0.33*
CTW-33U	28-Mar-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Apr-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	4.8
	17-Jul-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-01	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Apr-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Jul-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	15-Oct-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Jul-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	15-Oct-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Apr-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Jul-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U

TABLE 2.3
GROUNDWATER DATA FOR OBJECTIVE 1A - EVALUATE GROUNDWATER PASSING THROUGH CTW
Somersworth Sanitary Landfill Superfund Site, New Hampshire

Well ID	Date Sampled	QA/QC Sample Type	1,1-DCE 7* ((µg/L)	cis-DCE 70* (µg/L)	trans-DCE 100* (µg/L)	PCE 5* (µg/L)	TCE 5* (µg/L)	VC 2* (µg/L)
CTW-43U	15-Oct-02	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Jul-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	15-Oct-03	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Apr-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Jul-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Oct-04	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-May-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Aug-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	19-Oct-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	14-Apr-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	27-Jul-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Oct-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Oct-06	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Apr-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	31-Jul-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Oct-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Apr-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	6-Nov-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	2-Nov-09	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Mean 2001			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*0.79*
Mean 2002			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*0.79*
Mean 2003			*0.48*	*0.66*	*0.57*	*0.50*	*0.54*	*0.79*
Mean 2004			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*0.50*
Mean 2005			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*0.50*
Mean 2006			*0.27*	*0.23*	*0.26*	*0.30*	*0.15*	*0.41*
Mean 2007			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.44*
Mean 2008			*0.49*	*0.19*	*0.42*	*0.19*	*0.27*	*0.44*
Mean 2009			*0.31*	*0.33*	*0.32*	*0.35*	*0.40*	*0.33*
CTW-63U	22-Aug-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-05	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	3.5
	14-Apr-06	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	6-Jul-06	--	5.0 U	6.6	5.0 U	5.0 U	5.0 U	9.2
	25-Oct-06	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Apr-07	--	5.0 U	8.0	5.0 U	5.0 U	5.0 U	9.2
	1-Aug-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Oct-07	Field Duplicate	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Oct-07	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-08	Field Duplicate	5.0 U	24	5.0 U	5.0 U	5.0 U	33
	21-Apr-08	--	5.0 U	27	5.0 U	5.0 U	5.0 U	35
	5-Nov-08	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	27-Apr-09	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0
	3-Nov-09	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Mean 2005			*0.37*	*0.49*	*0.50*	*0.31*	*0.48*	*2.0*
Mean 2006			*0.27*	*2.4*	*0.26*	*0.30*	*0.15*	*3.3*
Mean 2007			*0.49*	*2.8*	*0.42*	*0.19*	*0.27*	*3.4*
Mean 2008			*0.49*	*13*	*0.42*	*0.19*	*0.27*	*17*
Mean 2009			*0.31*	*0.33*	*0.32*	*0.35*	*0.40*	*0.33*

Notes:

- All wells shown in this table were also sampled on February 15, 2001 but samples were concluded to be not representative and results are not shown (R-qualified).
U - indicates compound not detected; associated value is the quantitation limit
µg/L - micrograms per litre
CTW - chemical treatment wall
* ICL - Interim Cleanup Levels
Annual mean chlorinated ethene (CE) concentrations were calculated for 2001 using the April, July and October 2001 data. For subsequent years, the April, July and October data for that year are used to calculate the mean, so that each annual mean is based on data from three seasons. When a field duplicate was conducted, the data for the duplicates were averaged first to obtain a single value for that sampling event, which was then used to calculate the mean for the year. This was done in order to not underestimate the annual mean in the event that there were a primary and duplicate non-detect result.
For calculation, the method detection limit (MDL) for the appropriate year was substituted for non-detects. If a sample was diluted the MDL was multiplied by the dilution factor.
- MDLs:

2001 - 2003 Trichloroethene (TCE) = 0.54 µg/L
Tetrachloroethene (PCE) = 0.50 µg/L
cis-1,2-dichloroethene (cis-DCE) = 0.66 µg/L
trans-1,2-dichloroethene (trans-DCE) = 0.57 µg/L
1,1-dichloroethene (1,1-DCE) = 0.48 µg/L
Vinyl Chloride (VC) = 0.79 µg/L

2004 - 2005 Trichloroethene (TCE) = 0.484 µg/L
Tetrachloroethene (PCE) = 0.305 µg/L
cis-1,2-dichloroethene (cis-DCE) = 0.487 µg/L
trans-1,2-dichloroethene (trans-DCE) = 0.50 µg/L
1,1-dichloroethene (1,1-DCE) = 0.371 µg/L
Vinyl Chloride (VC) = 0.503 µg/L

2006 -2009 Trichloroethene (TCE) = 0.15 µg/L
Tetrachloroethene (PCE) = 0.3 µg/L
cis-1,2-dichloroethene (cis-DCE) = 0.23 µg/L
trans-1,2-dichloroethene (trans-DCE) = 0.26 µg/L
1,1-dichloroethene (1,1-DCE) = 0.27 µg/L
Vinyl Chloride (VC) = 0.41 µg/L

ATTACHMENT C

INTERVIEW RECORD

INTERVIEW RECORD

Site Name: Somersworth Sanitary Landfill, Somersworth NH		**EPA ID No.:** NHD980520225
Subject: 2nd Five Year Review		**Time:** 9:40 AM **Date:** 6/29/2010
Type: □ Telephone ■ Visit □ Other **Location of Visit:** 34 Blackwater Road, Somersworth NH 03878		□ Incoming □ Outgoing

Contact Made By:

Name: Gerardo Millán-Ramos	**Title:** Remedial Project Manager	**Organization:** U.S. EPA Region 1

Individual Contacted:

Name: Ms. Margaret Aikens	**Title:** Adjacent neighbor	**Organization:** n/a
Telephone No: 603-692-3474 **Fax No:** none **E-Mail Address:** none	**Street Address:** See location of visit above. **City, State, Zip:**	

Summary Of Conversation

I introduced myself to Ms. Aikens and explained the reason for my visit and proceeded to ask the questions listed on page C-3 of the June 2001 Comprehensive Five Year Review Guidance. The following is a list of the questions and a summary of Ms. Aikens' response.

1. What is your overall impression of the project (general sentiment)?
2. What effects have site operations had on the surrounding community?
3. Are you aware of any community concerns regarding the site or its operation and administration? If so please give details.
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so please give details.
5. Do you feel well informed about the site's activities and progress?
6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Ms. Aikens is the owner of the residence where the extraction well and two monitoring wells are located. Her home is located at the other side of Blackwater Road, directly across the extraction well's vault and the infiltration gallery. Mr. Norm LeClerc was present and helped in summarizing the scope of the remedy.

Ms. Aikens had no concerns about the project other than making sure her drinking water was not linked in any way to the affected groundwater. She was not totally clear on the scope of the remedy and ongoing activities. Mr. LeClerc kindly summarized the history and the scope of the remedy. I followed this with an explanation of the Five Year Review Process. She was not aware of any effects (negative or positive) in the surrounding community. In her opinion most people don't know what is going on and frankly do not care as long as their drinking water is safe. The only incident she recalls, occurred more than a year ago. The red light on top of the electrical panel at the vault went off and she called the City office to report it. City officials came very quickly and fixed it. She feels that the yearly letters about the GMZ requirements and the notifications on the Five Year Reviews are adequate enough to keep her informed about the site's progress.

INTERVIEW RECORD

Site Name: Somersworth Sanitary Landfill, Somersworth NH		**EPA ID No.:** NHD980520225
Subject: 2nd Five Year Review		**Time:** 10:45 AM **Date:** 6/29/2010
Type: □ Telephone ■ Visit □ Other **Location of Visit:** 1 Blackwater Road, Somersworth NH 03878		□ Incoming □ Outgoing

Contact Made By:

Name: Gerardo Millán-Ramos	**Title:** Remedial Project Manager	**Organization:** U.S. EPA Region 1

Individual Contacted:

Name: Mr. Norm LeClerc	**Title:** Landfill Project Coordinator	**Organization:** City of Somersworth
Telephone No: 603-431-0120 **Fax No:** none **E-Mail Address:** nleclerc@comcast.net	**Street Address:** City of Somersworth, One Government Way **City, State, Zip:** Somersworth NH 03878	

Summary Of Conversation

After driving along a portion of the GMZ boundary and inspecting some areas of the site, I interviewed Mr. LeClerc with the questions listed on page C-3 of the June 2001 Comprehensive Five Year Review Guidance. The following is a list of the questions and a summary of Mr. LeClerc's response.

1. What is your overall impression of the project (general sentiment)?
2. What effects have site operations had on the surrounding community?
3. Are you aware of any community concerns regarding the site or its operation and administration? If so please give details.
4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so please give details.
5. Do you feel well informed about the site's activities and progress?
6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Mr. LeClerc's overall impression of the project is that the remedy is working as intended and that the site is presentable. He has noticed not much of an effect on the community; in his words: "no one talks much about it". He is not aware of any community concerns regarding the site or its operation and administration; nor is he aware of any incidents or activities requiring response from local authorities. He feels well informed about the site's activities and progress. His suggestion is to do sampling on a yearly basis as it seems reasonable based on the data available and Geosyntec's recommendations.

INTERVIEW RECORD

Site Name: Somersworth Sanitary Landfill, Somersworth NH		**EPA ID No.:** NHD980520225
Subject: 2nd Five Year Review		**Time:** 9:00 AM **Date:** 7/22/2010
Type: ■ Telephone □ Visit □ Other **Location of Visit:** n/a		□ Incoming ■ Outgoing

Contact Made By:

Name: Gerardo Millán-Ramos	**Title:** Remedial Project Manager	**Organization:** U.S. EPA Region 1

Individual Contacted:

Name: Mr. Joseph Donovan	**Title:** Project Manager	**Organization:** NH DES
Telephone No: 603 271-6811 **Fax No:** 603 271-2181 **E-Mail Address:** jdonovan@des.state.nh.us	**Street Address:** 6 Hazen Drive **City, State, Zip:** Concord NH 03302-0095	

Summary Of Conversation

I called Mr. Donovan to perform this interview and ask him question about his comments on this Review. I prond proceeded to ask the questions listed on page C-4 of the June 2001 Comprehensive Five Year Review Guidance. The following is a list of the questions and a summary of Mr. Donovan's response.

1. What is your overall impression of the project (general sentiment)?
2. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site?
3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so please give details.
4. Do you feel well informed about the site's activities and progress?
5. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

Mr. Donovan's general impression is that the Remedy is working as intended and he sees no one at risk at this time. He views his role as a liaison providing technical guidance to US-EPA and the PRP group to insure that the remedy is protective and that it satisfies both Federal and the State of New Hampshire's environmental requirements. The latest example of this being the additional requirements for VOA analyses. There have been no routine communications or activities other than a few joint site inspections with EPA and the submittal of comments on yearly reports and draft documents such as this Five Year Report. He does not recall any complaints or incidents except one time in which a resident complained about someone excavating and extracting water near his residence. He went on site with EPA, drove around the area and could not see the reported activity. After checking with the City officials it was determined that most probably the activity observed by the resident was a permitted construction project to repair a water main. He replied back to the citizen with the information but no feedback was ever received. He does feel well informed and his only comment was that maintenance activities for the extraction well should be maintained and if necessary increased in frequency to sustain an adequate pumping rate.

INTERVIEW DOCUMENTATION FORM

The following is a list of individual interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.

Ms. Margaret Aikens	Adjacent neighbor	n/a	06/29/2010
Name	Title/Position	Organization	Date
Mr. Norm LeClerc	Landfill Project Coordinator	City of Somersworth	06/29/2010
Name	Title/Position	Organization	Date
Mr. Joseph Donovan, P.G.	Project Manager	NH DES	07/22/2010
Name	Title/Position	Organization	Date

ATTACHMENT D

NOTIFICATION LETTER ABOUT GMZ RESTRICTIONS

SOMERSWORTH, NEW HAMPSHIRE

City of Somersworth
One Government Way
Somersworth, NH 03878

City Hall
603.692.4262
www.somersworth.org

March 25, 2010

CERTIFIED MAIL 7006 0100 0006 7685 7207

Mr. and Mrs. Steven Almeida
27 Crest Dr.
Somersworth, NH 03878

RE: Notification of All Property Owners Within the Groundwater Management Zone (GMZ) Surrounding the Somersworth Landfill on Blackwater Road

Dear Mr. and Mrs. Almeida:

The US EPA Five Year Review Report for the Somersworth Sanitary Landfill has confirmed that clean-up measures at the site continue to protect human health and the environment. This letter is being sent to all owners of property located within the Groundwater Management Zone (GMZ) as required by the Consent Decree and is a follow up of previous communication to provide official notification to reiterate that your property at location (Map 35, Lot 11) is within the GMZ surrounding the Somersworth Landfill on Blackwater Road. The GMZ was established on 10 January 2000 with an Amendment to the City of Somersworth Zoning Ordinance. The City Zoning Ordinance contains certain restrictions including the prohibition of pumping of groundwater from within the GMZ for residential, irrigational, agricultural or industrial purposes. A complete copy of the Zoning Ordinance may be obtained from City of Somersworth, City Hall, City Clerk's Office or on the City's website at www.somersworth.com.

If you have any questions regarding this Notification, the City of Somersworth Zoning Ordinance, or other activities at the Somersworth landfill please do not hesitate to contact me by calling my office at Somersworth City Hall, (603) 692-9503.

Yours truly,

Robert M. Belmore
City Manager

cc: Gerardo Millan-Ramos, US EPA
Mr. Joseph Donovan, NH DES
Thomas A. Krug, Geosyntec by Email
Dave West, GE by EMail

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SOMERSWORTH NH 03878 MAR 2010

Postmark Here

7006 0100 0006 7685 7207

Sent To: ALMEIDA STEVEN L + SUZANNE J
Street, Apt. No., or PO Box No.: 27 CREST DR
City, State, ZIP+4: SOMERSWORTH NH 03878

PS Form 3800, August 2006 — See Reverse for Instructions

35 11

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.

ALMEIDA STEVEN L + SUZANNE J
27 CREST DR
SOMERSWORTH NH 03878

35 11 0

RECEIVED MAR 29 2010

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☒ Addressee

B. Received by (Printed Name) SUSANNE ALMEIDA C. Date of Delivery 3-26-10

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7006 0100 0006 7685 7207

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

ATTACHMENT E

FIVE YEAR REVIEW INITIATION PUBLIC NOTICE

Ad Number: 641225V01
Insertion Number:
Size: 3x6.00
Color Type: B&W

Client Name:
Advertiser: EPA NEW ENGLAND REGION 1
Section/Page/Zone: D/03/
Description: 5 YR REVIW SOMERSWORTH SANITARY LAN

Foster's Daily Democrat 1873
Publication Date: 02/05/2010

For Rent

NOW RENTING

604 Apartments - Unfurnished

ROCHESTER Furnished deluxe rooms, kitchen, all utilities, $495/month. till May 2010. 332-0107

ROCHESTER In-town efficiency, heat & hot water included, $120 a week. (603) 332-1240

ROCHESTER: Large 2 *bedrooms with air, dishwasher* & private deck. $865 includes heat & hot water. Master bedroom with *walk in closet*, on site laundry, minutes off Spaulding. (603) 335-6673

ROCHESTER, large affordable 2 bedoom in nice community. $779 plus ask about holiday special. Call 332-8852

ROCHESTER NH 1 Bedroom, 1 Bath, Ranch, family room, hardwood floors, skylights This is a detached apartment. $600+. 603-834-3241 chris.crombie@ektron com

Rochester, NH
A month FREE with 1 year lease
NORWAY PLAINS
2 bedrooms / 1,000 sq. ft.
Washer & Dryer Hookups
Dishwasher / Microwave
Heat & Hot Water Included
$945/month No Dogs
603-742-5300

ROCHESTER, No deposit with credit approval 3 bedroom, 1st floor, $795+. 312-5160

→ ROCHESTER ←
NORTHGATE APARTMENTS
Area's largest apartments, laundry on each floor
Hot water included.
1 bedroom - $800
2 bedroom - Starting at $675-$775
Daily 10am-5pm
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ROCHESTER ONE BEDROOM apartment $135 weekly 978/430-9015

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ROCHESTER'S FINEST PARTRIDGE GREEN
ONE MONTH FREE
PLUS $300 CASH BONUS NEW YEAR MOVE IN PROGRAM
A quality community for contemporary living. Studio, 1 & 2 bedrooms units with balconies. Low energy costs. Laundry on site. Cats and small dogs okay.
Starting at $575.
For more information call **603-332-8852**
Mon,Tues & Fri 10 to 4:30 & Thurs. from 10 to 5:30

Rochester, Willowbrook Move in special 2 weeks free. Renovated 1&2 bedrooms start $700+ Cats okay. 330-3352

ROLLINSFORD, large 3 bedroom duplex, hookups, fenced yard, deck, parking, $1000 + deposit. 842-2696

SOMERSWORTH Large 4 bedroom, newly renovated, washer & dryer, yard, parking, $1199 FREE ½ MONTH RENT, plus utilities, security & lease. Call 207-475-1407

OLDE MADBURY LANE APARTMENTS
DOVER
2 Bedroom & Studio Apartments
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Excellent access to Spaulding Turnpike, downtown Dover
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603-749-6208
Managed by Sawyer Mill Associates, Inc.

SEABROOK Cimarron Apartments, 1 bedroom $775, 2 bedroom $875 includes heat & hot water. Exit 1 off 95, 1/4 mile west. Inquire about Valentines Day special. 603-474-3006

SOMERSWORTH, 3 bedroom, $895 month, heat & hot water included. Big yard. 692-0844

WESTGATE VILLAGE
Dover, New Hampshire
1st Month FREE
1 and 2 bedroom apartments
Many with private entry, gas/electric heat, on-site laundry, on bus route, off Exit 8W Spaulding Turnpike.
One bedroom $658-780
Two bedroom $776-880
Tel. 749-3653

SOMERSWORTH 1 bedroom, $165/week, heat, & hot water included, on-site coin laundry. Also large 2 & 3 bedrooms, 1200 sq.ft., plenty of parking, hardwood floors, laundry hookup, porch, $230/week heat included. Section 8 ok. 603-978-5443

SOMERSWORTH 2/3 bedrooms starting @ $795 heat & hot water included. Lease, & deposit. 603-742-5300

SOMERSWORTH 3 bedroom Ranch duplex in nice area, parking, large yard, hookups. $1200. 603-692-7348

SOMERSWORTH Large 1 bedroom, heat, hot water, electric included. $850. Call 603-692-3543

SOMERSWORTH Large 2 bedroom, newly renovated, $975 includes heat/hot water. No pets. Call 603-235-7885.

SOMERSWORTH: Newly renovated 2 bedroom apartment. Quiet location with off street parking and laundry facilities. Heat, hot water, *trash and snow removal* included. Section 8 ok. Call (603) 692-6450 or (603)502-3164

COUNTRY BROOK
Spacious, sparkling 2-bedroom apartments on 63 acres across from the Rochester Country Club.
$795/mo.
332-8444
www.countrybrookapartments.com
Professionally managed by JCM Management Co., Inc.

SOMERSWORTH & SOUTH BERWICK Large 1 bedroom apartments $675-$750 heat & hot water included. No pets. greatworksproperties. com Jim 207-451-8332

SOUTH BERWICK 2 bedroom townhouse. Heat & hot water included. Call 207-252-0667.

617 Commercial Space

DOVER 113 Locust St. Professional office space available June 1. 500 sq. ft. Private parking & entrance, reception area, 2 offices, storage, kitchen, 1 bathroom. 1 year lease required. $1000/mo. 603-749-2700

618 Condominiums

LEE Sunny 2 bedroom condo on 29 acres! Dishwasher, washer/ dryer hook ups, full basement. Deck. Pets ok. $1100 603-659-5917

ROCHESTER 2 bedroom condo, quiet, safe, energy efficient. $900. Call 603-973-9530

LOOKING FOR HOUSING IN NEW HAMPSHIRE, MAINE OR VERMONT?
WE MANAGE THE FOLLOWING U.S.D.A. RURAL DEVELOPMENT PROPERTIES:

PROPERTY	LOCATION	TYPE
APPLE TREE VILLAGE	CONWAY, NH	ELDERLY
BELLOWS FALLS HOUSING	BELLOWS FALLS, VT	FAMILY
BRIDGEVIEW APTS.	PITTSFIELD, NH	FAMILY
BUTTERFIELD ELDERLY	WEST DOVER, VT	ELDERLY
CHURCH HILL APTS.	DURHAM, NH	ELDERLY
COLONIAL COURT I & II	LITTLETON, NH	ELDERLY
CRANBERRY HILL APTS.	TROY, NH	FAMILY
GILFORD VILLAGE KNOLLS I & II	GILFORD, NH	ELDERLY
HILLSCOMB APARTMENTS	HILLSBORO, NH	FAMILY
HIGHLAND APARTMENTS	ASHLAND, NH	ELDERLY
JAFFREY MILL APTS.	JAFFREY, NH	FAMILY
MOUNTAINVIEW APTS.	OSSIPEE, NH	ELDERLY
MOUNTAIN VILLAGE	GROVETON, NH	ELDERLY
ORCHARD CIRCLE	FARMINGTON, NH	ELDERLY
PAPER MILL VILLAGE	ALSTEAD, NH	ELDERLY
PEQUAWKET VILLAGE	FRYEBURG, ME	ELDERLY
POND VIEW APTS.	CONWAY, NH	ELDERLY
PROCTORSVILLE GREEN	PROCTORSVILLE, VT	FAMILY
PROMENADE COURT	GORHAM, NH	FAMILY
ROCKBROOK APTS.	PETERBOROUGH, NH	FAMILY
UNION SQUARE	WINDSOR, VT	FAMILY
WALL STREET	SPRINGFIELD, VT	FAMILY
WENTWORTH PLACE I & II	MERRIMACK, NH	ELDERLY
WINCHESTER WOOD	SWANZEY, NH	FAMILY

Elderly – 62 or older, handicapped or disabled
Family – families, individuals, elderly or handicapped
Applicants must meet U.S.D.A. Rural Development Income Guidelines.
In most cases, waiting lists do apply.
For more information please contact:

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P.O. Box 10540, Bedford, NH 03110-0540
603-641-2163 TDD Access
OR VISIT US AT OUR WEBSITE
www.stewartproperty.net

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No Lease Required
One Bedroom from $670
Two Bedrooms from $720
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Quiet Setting, Great Location
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618 Condominiums

ROCHESTER 2 bedroom, 1½ baths, washer/dryer, quiet setting, very clean. $1000+ utilities. 603-498-0338

622 Duplexes - Multiplexes

SOMERSWORTH 2 BEDROOM, 1 Bath, Duplex, near downtown, applianced kitchen, laundry hookup, security deposit, $825 + utilities. 603-692-2265

636 Houses - Unfurnished

BARRINGTON 2 bedroom house, laundry hookups. $1000 plus utilities. 978-348-8051

FARMINGTON 3 bedroom, 1.5 bath, porch & yard. Small pet o.k. $1,000 month. $1,000 security. 3/1 available. Call R W Real Estate, 603-755-9111.

LEE Tri-level duplex on 2 acres. Newly renovated, 3 bedroom, 1½ bath, family room, minutes to UNH & Oyster River School District. $1350/month plus utilities. No cats. Norman C. McCosker - Broker 603-335-5070 ncmaccounting@metrocast.net

636 Houses - Unfurnished

MILTON: 3 bedroom, Available 2/14. $1075+. 1st & ½ month security. References required. No smoking, no pets. cell 603-978-7989

636 Houses - Unfurnished

Rochester Rent to own from 2 bedroom, 2 car garage $1200, 3 bedroom *$1575 + utilities*. Good people, bad credit, 100% financing, $8,000 Stimulus, tax shelter, etc! 664-5987. NO SMOKING, 2 left!

656 Mobile - Homes

ROCHESTER: Spacious 2 bedroom, 2 bath, $800. Section 8 ok. No smoking, no pets. 603-332-6589

664 Office Space

Newmarket: 1500 square feet of office space on two floors, off street parking, great location right on route 108. All utilities, including landscaping, maintenance and snow removal are included in the rent. www.cheneyco.com or call 603 659-2303

682 Rooms For Rent

ROCHESTER Furnished deluxe rooms, kitchen, all utilities, $495/month. till May 2010. 332-0107

684 Rooms - Furnished

GONIC Large furnished room in private home, private entrance, $135/ week includes all. No smoking. 603-312-2929

684 Rooms - Furnished

LARGE ROOMS, air, full kitchens, utilities included. Affordable, clean & quiet. Laundry & convenience store/deli on site. Strafford Inn / Rochester Residence Inn Call 603-755-3411.

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Friday, February 5, 2010


Transportation

Real Estate


Employment


Merchandise


Pets

41 Lost-Found

LOST 2/1, ladies black handbag, on Whittier St./Glenwood Ave. If found call 603-742-2797

76 Business Opportunities

Drive Thru Coffee Shop, annual business 150K, asking 115K. Serious inquiries. 603-216-7867

JUMBLE
THAT SCRAMBLED WORD GAME by Mike Argirion and Jeff Knurek

Unscramble these four Jumbles, one letter to each square, to form four ordinary words.

HANEY
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FAFTY
TEELEY
GAFINC

WHAT THE COUPLE ENJOYED WHEN THEY WERE BUMPED TO FIRST CLASS ---

Now arrange the circled letters to form the surprise answer, as suggested by the above cartoon.

A: A [redacted]

Yesterday's Jumbles: [redacted]
Answer: When the couple [redacted] vacation, they let their — MIND [redacted] NDER"

SUDOKU

Difficulty: 5 (of 5)

	1				7		5	
					8	2		
		6		9				
	8	3				5		
					4			3
			2		9		4	
				7	2		9	
		9	6			3		8
		1		5				

2-5-10 (c) JFS/KF -- Dist. by UFS, Inc.

HOW TO PLAY: Each row, column and set of 3-by-3 *boxes must contain the* numbers 1 through 9 *without repetition.*

PREVIOUS SOLUTION

3	7	9	4	1	5	2	6	8
8	5	6	2	7	9	1	3	4
4	1	2	8	6	3	7	9	5
1	4	5	9	3	7	8	2	6
2	9	3	6	4	8	5	7	1
7	6	8	5	2	1	9	4	3
5	2	7	3	8	4	6	1	9
6	8	4	1	9	2	3	5	7
9	3	1	7	5	6	4	8	2

Announcements | Announcements

17 Public Notice | 17 Public Notice

NEWINGTON, NH
NOTICE OF PUBLIC HEARING
ADOPTING THE SB2 FORM OF TOWN GOVERNMENT

To the residents of the Town of Newington, in Rockingham County in the State of New Hampshire. Notice is here-by given of a PUBLIC HEARING on the following, which was brought forth by petition.

'Shall we adopt the provisions of RSA 40:13 (known as SB 2) to allow official ballot voting on all issues before the Town of Newington on the second Tuesday of March? '

Public Hearing to be held Wednesday, February 10, 2010 at Town Hall 6:30pm - 205 Nimble Hill Road Newington NH for the purpose of openly discussing this change in the form of local government.

17 Public Notice | 17 Public Notice | 17 Public Notice

EPA Starts Five-Year Review of Somersworth Sanitary Landfill Superfund Site

The U.S. Environmental Protection Agency (EPA) has begun its second Five-Year Review of the Somersworth Sanitary *Landfill Superfund Site, Somersworth, NH. Five-Year Reviews* are required by law and occur every five years. The reviews determine if the cleanup is protective of human health and the environment. This Five-Year Review will be completed by September 2010 and the results will be publicly available.

The Superfund Site cleanup plan implemented an innovative remedy, a chemical treatment *wall* or *permeable reactive* barrier is being used to clean ground water. The passage of a local zoning ordinance prohibiting ground water use in the area further protects the public health. Additional measures include the installation of a gas collection trench. Soil gas monitoring has shown the trench to be effective in preventing landfill gas migration towards residences.

Contaminants at the site included volatile organic compounds (VOCs) and inorganic compounds. The ground water is contaminated with VOCs and inorganic chemicals. Sediments contain low levels of arsenic, chromium, and lead. Peter's Marsh Brook and Tate's Brook contain VOCs and metals.

More information about the cleanup can be found on-line at www.epa.gov/ne/superfund/sites/somersworth or at the Somersworth Public Library, 27 Main Street, Somersworth, NH 03878.

EPA
United States Environmental Protection Agency New England

For more information, contact:
Gerardo Millan-Ramos
1-888-372-7341, ext. 81352
millan-ramos.gerardo@epa.gov
Joseph Donovan (NHDES)
joseph.donovan@des.nh.gov

Employment

146 Help Wanted

CNC LATHE MACHINISTS able to set up and program. At least 5 years experience required. Benefits available. Apply within at J&C Industries 21 Batchelder Rd. Seabrook NH 8-4

1st Shift Line Lead
Assembly, Packing
Production experience
Small piece work
Adept/nimble fingers
Pay is $11/hour to start
Long term temp
Portsmouth
Seaside Associates
603-766-3480

17 Public Notice | 17 Public Notice

NOTICE OF MEETING

The Somersworth Planning Board will meet on Wednesday, February 17, 2010 at 6:30 p.m., in the City Council Chambers at City Hall, One Government Way. There is a public hearing scheduled for the following:

Contech Thermopol, LLC, on behalf of Neman, Inc. is seeking preliminary design review of a site plan for a 39,500 square foot building addition for property located at 9 Interstate Drive, in the Industrial (I) District, Assessor's Map 58, Lot 06.

Copies of application materials and amendment proposals are available for review by the public at the Development Services Department - Planning Office at City Hall. It is the policy of the Board not to take up any new business after 9:30 p.m. and to adjourn by 10:00. Public who are hearing impaired or require other special arrangements, please contact the Planning Office at City Hall (692-9519) one-week prior to the meeting for assistance. TDD Access: call Relay NH at 711.

18 Request for Bids | 18 Request for Bids

INVITATION FOR BIDS
APARTMENT PAINTING & CLEANING

The Portsmouth Housing Authority is issuing an invitation for Bids to contractors for the painting and cleaning of the interior of apartments in all of its public housing developments.

Specifications for the above invitation may be obtained by contacting Rhonda Schwarz, Administrative Assistant, Portsmouth Housing Authority, 245 Middle Street, Portsmouth, NH (603) 436-4310.

Sealed bids will be received until 10:00 a.m. on Thursday, February 25, 2010 at the central offices of the Portsmouth Housing Authority, 245 Middle Street, Portsmouth, NH 03801 at which time they will be publicly opened and read aloud.

Any requests for additional information pertaining to these bids or appointments to view apartments can be made prior to bidding by contacting Allan Bishop, Facilities Manager at (603) 436-4310.

The Portsmouth Housing Authority is an Equal Opportunity Employer and we reserve the right to accept or reject any and all bids and to waive any informality in the bidding process.

Joseph N. Couture
Executive Director
Portsmouth Housing Authority
February 1, 2010

18 Request for Bids | 18 Request for Bids

DEPARTMENT OF PUBLIC WORKS
TOWN OF DURHAM
100 STONE QUARRY DRIVE
DURHAM, NH 03824
603/868-5578 • FAX 603/868-8063

INVITATION TO BID

The Town of Durham Department of Public Works is requesting bids from qualified pipe installation contractors for a water and sewer extension on Mast Road in Durham, NH. The work involves installation of approximately 1,800 feet of 12-inch sewer, 9 sewer manholes, various sewer service connections, 1,200 feet of 10-inch water main, and various valves and associated appurtenances. Bids must be submitted in sealed envelopes no later than 3 PM on February 22, 2010 to the Durham Dept. of Public Works, 100 Stone Quarry Drive, Durham, NH 03824. Bids submitted after this time will not be accepted. A non-mandatory pre-bid meeting will be held at the Durham DPW on February 16, 2010 at 2 PM. Bidding documents will be available at the following location starting February 8, 2010:

Appledore Engineering, Inc.
177 Corporate Drive, Portsmouth, NH 03801
(603) 433-8818

Questions and comments should be directed to Joseph Persechino, P.E. at (603) 433-8818, or David Cedarholm, P.E. (603) 868-5578.

146 Help Wanted | 146 Help Wanted

ANCHORAGE *By the Sea*
CHEF
Ogunquit, Maine resort seeking chef for established, casual, seasonal, food and beverage operation. Minimum of 3 yrs. exp. req. Must have experience with menu planning for breakfast, lunch and dinner as well as ability to maintain food cost and inventory controls. Motivational and team building skills a plus.
RESUMES: (Fax) 207-641-2177
OR E-MAIL:
ACCT@ANCHORAGEBYTHESEA.COM

146 Help Wanted | 146 Help Wanted

Bellamy and Watson Fields Assisted Living Facilities
LPN/Shift Supervisor - full time
Experience with elderly
Strong leadership, clinical and customer service skills
Competitive salary and benefits

Please apply in person at Bellamy Fields
Monday-Friday, 8 a.m.- 4 p.m.
150 Garrison Road, Dover
or contact Julie Stone
603-516-8888 for an interview.

Diesel Mechanic

Responsibilities will be Engine & Drive train rebuilding. Electronic diagnostics & repair. Job requires good diagnostic skills. Successful candidate must have at least 3 years of experience. 45-50 hours per week.

If you like to rebuild motors and do electronic work this job is for you!

401K plan with company matching funds, full company paid health insurance; will pay 70% of family coverage, dental insurance available, uniforms, 2 1/2 weeks vacation, paid factory training.

Annual $2000 thank you bonus after 5 years of employment.

Also seeking
Warranty Administrator
Apply:
Rochester Truck Repair LLC
8 Flagg Rd., Gonic, NH 03839
603-335-2084
See Hulk
#1 HINO DEALER IN NEW ENGLAND

ATTACHMENT F

CITY OF SOMERSWORTH GROUNDWATER PROTECTION DISTRICT ZONING ORDINANCE AND GMZ MAP

CITY OF SOMERSWORTH, NEW HAMPSHIRE

CHAPTER 19 - ZONING ORDINANCE

ADOPTED BY SOMERSWORTH CITY COUNCIL - AUGUST 30,1989

AMENDED:

MARCH, 1990
AUGUST, 1990
SEPTEMBER, 1990
JANUARY, 1991
APRIL, 1991 MAY, 1991
SEPTEMBER, 1991
MAY, 1992
SEPTEMBER, 1992
JULY, 1993
SEPTEMBER, 1993
FEBRUARY, 1994
APRIL, 1994
JULY, 1994
FEBRUARY, 1995
OCTOBER, 1995
JANUARY, 1996
JULY 15, 1996
JUNE 2, 1997 APRIL 6, 1998
JUNE 1, 1998
JANUARY 18, 1999
OCTOBER 19,1999
JANUARY 10, 2000
APRIL 17, 2000
AUGUST 14, 2000
DECEMBER, 2000
MARCH, 2001
MAY 21, 2001
OCTOBER 7, 2002
OCTOBER 21, 2002
MAY 3, 2004
MARCH 21, 2005
SEPT 6, 2005
APRIL 17, 2006
SEPTEMBER 5 2006
APRIL 16,2007
AUG 13, 2007
JAN 22, 2008
OCT 6, 2008
NOV 17,2008
DEC 15, 2008
FEB 2. 2009
FEB 17, 2009

CITY OF SOMERSWORTH

CHAPTER 19 – ZONING ORDINANCE

Amended March, 1990:
Pages 1, 2, 3,13,14, 52, 56,60 through 74. 83. 84, 85. Also, tables 4.A.1; 4.A.2; 4.A.3; 4.A.4; 4.A.5. Note #5; 5.A.1.;5.A.2.

Amended August, 1990:
Section 7, pages 16 thru 23.

Amended September, 1990:
Section 17, pages 63 thru 67. Table 5.A.1 and Table 5.A.1 Notes.

Amended January 7, 1991:
Section 20, page 89 - Zoning Board of Adjustment.

Amended April 1, 1991:
Section 18.C.4.e. - Political Signs.

Amended May 20, 1991:
Section 3.D., Page 5 - Commercial/Industrial District; Table of Uses, Tables 4.A.2; 4.A.3; 4.A.4; 4.A.5; 5.A.1.

Amended September 16, 1991:
Section 12, pages 46 thru 54 - Wetlands Conservation Overlay District.

Amended May 4, 1992:
Section 13, pages 53 thru 58 - Historic District.

Amended September 21, 1992:
Section 8, pages 24, 26 and 28 - Home Occupations.

Amended July 26, 1993:
Section 21, page 93 - Definitions; Table 4.A.4.

Amended September 7, 1993:
Section D.2., page 5 - Commercial/Industrial District.

Amended February 28, 1994:
Section 3. D.2., pages 5 & 6 - Commercial/Industrial District. Section 14, pages 60 thru 62 - Sexually Oriented Businesses (new). Section 18, page 71 on (19 pages) - Sign Regulations. Table of Uses - Table 4.A.5 (at end of chapter)

Amended April 4, 1994:
Table of Uses - Table 5.A.1 and Table 5.A.1 Notes.

Amended July 18, 1994:
Sections 11.B.4. & 11.B.5. (page 39); 11.B.8.f.& 11.B.9. (Pages 42 & 43); 11.c.(Pages 45 & 45A).

Amended February 21, 1995:
All pages renumbered to correspond with section numbers.
Table of Contents.
New Section added - "Section 15, Commercial Node District" (pages 15.1 thru 15.3).
Section 15 through Section 23 renumbered to Section 16 through Section 24.
Add Section 3.B.16. (page 3.3).
Add Section 3.D.8. (page 3.9).
Section 20.A.1. (page 20.1).
Section 20.B.3. (pages 20.1 & 20.2).
Section 20.B.3.h. (page 20.3).
Section 22 (pages 22.1 thru 22.9).
Tables 5.A.1&5.A.2

Amended October 2, 1995:
Added new Section 11 - Excavation of Earth Products (pages 11.1 to11.4)
Section 11 through Section 24 renumbered to Section 12 through Section 25.

Amended January 10, 1996:
Add Section 3.B. 15 (page 3.3).
Add new Section 16 - Recreation District (pages 16.1 thru 16.3).
Renumber all sections and pages after section 16 to reflect this change.
Section 24 (page 24.2).
Table 5.A. 1 Notes (page 8).

Amended July 15, 1996:
Delete Section 20 - Landscaping and Buffer Requirements, in its entirety.
Delete Section 22 - Circulation and Parking Regulations and replace with Section 21 – Circulation And Parking Regulations (page 21.1).
Renumber Section 23 through Section 26 to Section 22 through 25.

Amended June 2, 1997:
Section 8.D. (page 19:18)
Section 8.F.3. (page 19:18)
Section 8.F.6. (page 19:19) delete second paragraph
Table 4.A.3 & Note #6 (page 19:77)

Amended April 6, 1998:
Section 23 - Definitions (pages 68 and 70)
Table 4.A.3 and 4.A.5
Amended June 1, 1998:
Section 20 Sign Regulations - page 60.

Amended January 18, 1999:
Table 4.A.4 and 4.A.5

Amended October 19, 1999:

Added new Section 23 Naming of Public Streets and Rights of Way – pages 72-75

Renumbered Section 23 Definitions to Section 24 - pages 76-82. Renumbered Section 24 Administration & Enforcement to Section 25 - page 83. Renumbered Section 25 Interpretation, Conflicts & Separability to Section 26 - pages 84&85.

Amended January 10, 2000:
Section 8 Home Occupations - pages 18,19 & 21.
Section 10 Groundwater Protection District - pages 25 & 26.

Amended April 1, 2000:
Section 8 Home Occupations - pages 18,19 & 21.

Amended August 14, 2000:
Section 9 - Manufactured Housing District - pages 23 thru 24C. Table 4.A.5- pages 91 &92.

Amended December 11, 2000:
Section 12 - Flood Plain District - pages 32 thru 38A.

Amended March 19, 2001:
Section 3.A. - Districts - page 1.
Section 3.B.7. (deleted) - page 2.
Section 3.D.10. and 3.D.10.a. - (new) - page 7.
Section 24.NN. and 24.PP (delete) - page 79 and 80.
Tables 4.A.1. through 5.A.2 - pages 86 through 94.

Amended May 21, 2001:
Section 19.3.A. - Districts - page 1.
Section 19.3.B.14. - Purpose of Districts - page 3.
Section 19.3.D.11. - District Boundaries - page 7.
Section 19.3.D.12. - District Boundaries - pages 7 & 8.
Section 19.21. - Circulation & Parking Regulations - page 70.
Tables 4.A.1,4.A.2,4.A.3,4.A.4,4.A.5,5.A.1 - pages 85 thru 92.

Amended October 7, 2002:
Added new Section 24 Common Driveway Subdivision – pages 78 and 79.
Renumbered Section 24 thru Section 26 to Section 25 thru Section 27.

Amended October 21, 2002:
Table 4.A.3. – page 90

Amended 5/03/2004:
Section 7, Cluster Subdivision – pages 12 thru 17. Changed Cluster Subdivision to read Conservation Residential Development throughout Section.
Sections 20.D.2.a, 20.D.2.e, 20.D.2.f – page 68.

Section 20.D.4 – page 70.
Section 25, Definitions – pages 80 thru 84.
Added new Section 26, Telecommunication Facilities – pages 86 thru 93.
Amended Table of Uses (Table 4.A.3), page 98.
Amended Table of Uses (Table 4.A.5), pages 101 & 102.

Amended 3/21/2005:
Section 19.12.A. Flood Plain District, Applicability – page 34.
Section 19.14.H.2. Historic District, Appeal Process – page 52.
Section 19.20.B.13. Sign Regulations, Flashing Sign – page 61.
Section 19.20.C.2.e. Sign Regulations – page 63.
Section 19.20.C.4.a. Sign Regulations – Banner Signs – page 64.
Section 19.25.Y. Definitions, Dwelling Unit – page 82.
Section 19.25.DD. Definitions, Frontage – page 82.
Section 19.27.C. & 19.27.E. Administration & Enforcement – page 94.
Table 4.A.1. – page 96.

Amended 9/06/2005:
Section 19.25.JJ. Definitions, Height – page 83.
Table 5.A.2. – page 106.

Amended 4/17/2006:
Section 7, Conservation Residential Development – deleted in its entirety.
Section 24, Common Driveway Subdivision – deleted in its entirety.

Amended 9/05/2006:
Added New Section 29, Interim Growth Management Regulation, pages 88 & 89.

Amended 04/16/2007:
Section 25, Definitions, page 74.

Amended 04/16/2007:
Section 25, Definitions, page 75.

Amended 04/16/2007:
Table 5.A.1, Dimensional and Density Regulations, page 99.

Amended 08/13/2007:
Table 5.A.1, Dimensional and Density Regulations, Page 99.

Amended 01/22/2008:
Table 4.A.1, Table of Uses, Page, 90.
Table 4.A.2, Table of Uses, Page 91.
Table 4.A.3, Table of Uses, Page 92& 93.
Table 4.A.5, Table of Uses, Pages 95, 96 & 97.

Amended 10/06/2008:
Section 23 Naming of Public Streets and Rights of Way, Pages 69-71.

Amended 11/17/2008:
Replaced Section 29, Interim Growth Management Regulation in its entirety with new Section 29, Maximum Allowable Occupancy, Page 88.

Amended 12/15/2009:
Amend Section 19.3.D.8, Commercial Node District by deleting Section 19.3.D.8.a and Section 19.3.D.8.c and replacing with new Section 19.3.D.8.a and new Section 19.3.D.8.c, Page 7.

Amended 02/02/2009:
Replaced Section 20, Sign Regulation in its entirety with revised Section 20, Sign Regulations, pages 54-67.

Amended 02/17/2009:
Replaced Section 13, Wetlands Conservation Overlay District in its entirety with Revised Section 13, Riparian Wetland Buffer District Ordinance, pages 36-49.

CHAPTER 19 - ZONING ORDINANCE
TABLE OF CONTENTS

Section 10 Groundwater Protection District

19.10.A. AUTHORITY. In accordance with New Hampshire Revised Statutes Annotated (RSA) Chapter 4-C:22 III, as the same may be subsequently amended, the City of Somersworth hereby adopts the following Groundwater Protection District.

19.10.B. PURPOSE. The purpose of this ordinance is, in the interest of public health, safety and general welfare, to protect, preserve and maintain the existing and potential groundwater supply and groundwater recharge areas within the known aquifer from adverse development, land use practices or depletion, and to allow for the restoration of degraded ground water by the establishment of a "Ground Water Management Zone".[1]

19.10.C. LOCATION.

19.10.C.1. The boundaries of the Groundwater Protection District shall be the outermost edge of the out wash deposits of the "Lily Pond Aquifer", as designated in the "Report on Aquifer Definition Lily Pond Aquifer Somersworth, New Hampshire," prepared by BCI Geonetics, Inc., and included in the Water Master Plan Update dated June1984. The Ground Water Management Zone is designated by the Ground Water Management Zone Overlay Map included in the Preferred Remedial Action 100% Design and Demonstration of Compliance Plan prepared by Beak International, Inc. and Geo Syntec Consultants International, Inc.[1]

19.10.C.2. When the actual boundary of the Groundwater Protection District is in dispute by any owner or abutter actually affected by said boundary, the Planning Board, at the owner/abutter's expense and request, may engage a professional geologist or hydrologist to determine more accurately the precise boundary of said Groundwater Protection District.

19.10.D. APPLICABILITY.

19.10.D.1. All land use activities and development conducted within the Groundwater Protection District shall be regulated by the standards established herein.

19.10.D.2. The standards established herein shall constitute the rules of an overlay zone and shall be superimposed over other zoning districts or portions thereof. The provisions herein shall apply in addition to all other applicable ordinances and regulations. In the event of a conflict between any provision herein and any other ordinance or regulation, the more restrictive requirement shall control.

19.10.E. DEFINITIONS.

19.10.E.1. Animal Feed Lots. A plot of land on which 25 livestock or more per acre are kept for the purpose of feeding.

19.10.E.2. Groundwater. Water in the subsurface zone at or below the water table in which all pore spaces are filled with water.

19.10.E.3. Groundwater Management Zone (GMZ). The subsurface volume in which ground water contamination associated with a discharge of a regulated contaminant is contained. (State of NH Groundwater Protection Rules - Env - WS410.)[2]

[1] Amended 1/10/2000.

[2] Passed 1/10/2000.

19.10.E.4. Hazardous and Toxic Materials. Those materials that pose a present or potential hazard to human health and the environment when improperly stored, transported or disposed of. These materials include those listed in the New Hampshire Hazardous Waste Regulations. Third Edition. Appendixes 1-4, 1985, New Hampshire Dept. of Environmental Services, Concord, as the same may be subsequently amended.

19.10.E.5 Impervious Surface. A surface covered by any material (such as pavement, cement, roofing) that prevents surface water from penetrating the soil directly.

19.10.E.6. Leachable Wastes. Waste materials including solid wastes, sewage, sludge, and agricultural wastes that are capable of releasing waterborne contaminants to the surrounding environment.

19.10.E.7. Solid Waste. Discarded solid material with insufficient liquid content to be free flowing. This includes but is not limited to rubbish, garbage, scrap materials, junk, refuse, inert fill material and landscape refuse.

19.10.F. PROHIBITED USES. The following uses are expressly prohibited from the Groundwater Protection District:

19.10.F.1. Within the Lily Pond Aquifer[1]

19.10.F.1.a. The disposal of solid waste including landfills and sewage lagoons, excepting disposal of stumps and brush;

19.10.F.1.b. Storage of road salt or other deicing chemicals except in a property constructed shelter for use on site;

19.10.F.1.c. Dumping of snow containing road salt or other deicng chemicals;

19.10.F.1.d. Motor vehicles service or repair shops;

19.10.F.1.e. Junk and salvage yards;

19.10.F.1.f. Animal feedlots;

19.10.F.1.g Commercial or industrial handling, disposal, storage or recycling of hazardous or toxic materials or wastes; and

19.10.F.1.h Underground storage or petroleum or any refined petroleum product. All existing underground tanks, including those under 1,100 gallons, must be registered with the Somersworth Fire Department within six months of the enactment of this regulation. Existing tanks over 1,100 gallons are subject to Water Supply and Pollution Control Commission regulation, pursuant to New Hampshire Code of Administration No. W5411.

19.10.F.2. Within the Groundwater Management Zone:

19.10.F.2.a. The requirements, restrictions, and prohibition of the underlying Zoning District shall continue to apply to the extent that they are not inconsistent with the provision of this section; and[2]

19.10.F.2.b. Pumping of ground water from any well, trench, sump or other structure for residential, irrigation, agricultural or industrial purpose is prohibited.[2]

19.10.G. SPECIAL CONDITIONS. The following conditions shall apply to all uses in the Groundwater Protection District:

[1] Added 1/10/2000.
[2] Passed 1/10/2000.

19.10.G.1. A lot shall not be rendered more than ten percent (10%) impervious. A proposed development plan which will incorporate a stormwater drainage plan, approved by the City of Somersworth Planning Board and prepared by a professional engineer certified to practice in the State of New Hampshire shall be provided. The plan shall provide for the on-site retention and percolation of all development generated stormwater runoff from a ten (10) year storm. Furthermore, the stormwater drainage plan shall provide for the filtering of parking area runoff to remove oil, gasoline and other impurities prior to retention and percolation of the runoff;

19.10.G.2. Development or land use activities proposed within the Groundwater Protection District shall be connected to the municipal sewage disposal system and the municipal water system;

19.10.G.3. Any use retaining less than thirty percent (30%) of lot area, regardless of size, in its natural vegetative state with no more than minor removal of existing trees and vegetation shall require a special permit;

19.10.G.4. Mining operations, including sand and gravel removal, shall require an Earth Removal Permit, pursuant to New Hampshire Revised Statutes Annotated Chapter 155-E, which is herein incorporated by reference. Such excavation or mining shall in no case be carried out within eight (8) vertical feet of the seasonal high water table; and

19.10.G.5. The storage of petroleum or related products in a freestanding fuel oil tank within or adjacent to a residential structure which is used for the normal heating of said structure shall be permitted pursuant to the conditions outlined in subsection H below, and all applicable state regulations. All tanks shall be protected from internal and external corrosion and shall be of a design approved by the Somersworth Fire Department. All freestanding tanks shall be placed on an impermeable surface such as a concrete pad. No tank may be abandoned in place. A tank shall be disposed of after emptied of all hazardous materials if it has been out of service for a period in excess of twelve (12) months. The product and the tank shall be disposed of by the property owner as directed by the Somersworth Fire Department and all applicable state laws. All leaking tanks must be emptied by the owner or operator within twelve (12) hours after detection of the leak and removed by the owner and/or operator as per above.

19.10.H. ADMINISTRATION.

19.10.H.1. Development or land use activities proposed within the Groundwater Protection District that require a special permit, as provided in subsection G above, shall be reviewed' by both the Planning Board and the Somersworth Conservation Commission. The Planning Board shall either approve, conditionally approve or disapprove a special permit only after it determines that the proposed land use development and/or activities comply with the purpose of this regulation. In making such a determination, the Planning Board shall give consideration to the simplicity, reliability and feasibility of the control measures proposed and the degree of threat to groundwater quality if the control measures failed.

19.10.H.2. Development or land use activities proposed within the Groundwater Protection District that require subdivision or site plan approval from the Planning Board shall also be reviewed by the Somersworth Conservation Commission. The Planning Board and the Conservation Commission shall verify that the proposed activity will conform to the provisions of this regulation ordinance prior to action by the Planning Board to approve, conditionally approve or disapprove the application.

19.10.H.3. The Building Inspector shall not issue a building permit for development or land use activities until such time as he/she verifies that the proposed activity will conform to the provisions of this ordinance. The Building Inspector may consult with the Planning Board and/or Conservation Commission as he/she deems necessary.

19.10.H.4. Land use activities that do not require the receipt of Panning Board approval or building permits shall nonetheless be subject to the requirements and standards established herein.

19.10.H.5. A hydrogeologic study may be required by the Planning Board and/or the Conservation Commission to investigate the impacts a proposed development or land use activity will have on an existing or future groundwater supply. A qualified professional hydrologist or geologist shall be chosen by the City of Somersworth and the applicant for approval shall pay any and all costs incurred.

19.10.H.6. For all freestanding fuel oil tanks as permitted per Section 7. F., the property owner shall file with the City of Somersworth the following information prior to the installation of a tank:

19.10.H.6.a. The size of the tank;

19.10.H.6.b The type of tank;

19.10.H.6.c. The type of material being stored and its quantity;

19.10.H.6.d. The location of each tank on the premises, complete with a sketch map; and

19.10.H.6.e. The age of each tank.

19.10.I. ENFORCEMENT. If the Planning Board and/or the Building Inspector finds that any of the requirements and standards established herein are in violation, the Building Inspector shall order the owner, in writing, to make such corrections as he/she deems necessary to bring the development and activities into compliance with the provisions of this ordinance. Such order shall be complied with within twenty-four (24) hours of the original notice to the owner. Where the owner fails to comply with the order of the Building Inspector, a fine of one hundred dollars ($100) per day, or the maximum amount which is authorized by statute, may be levied against said owner. The fine shall be retroactive and shall begin to accrue on the date on which the property owner receives written notice from the Building Inspector that he/she is in violation of this ordinance.

Groundwater Management Zone (GMZ)

ATTACHMENT G

JUNE 9 2010 SITE INSPECTION OBSERVATIONS & SITE INSPECTION CHECKLIST

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 Post Office Square Suite 100
BOSTON, MASSACHUSETTS 02109-3912

June 17, 2010

Mr. Robert Belmore
City Manager
One Government Way
Somersworth NH 03878

Subject: Somersworth Sanitary Landfill
Somersworth, NH
EPA ID: NHD980520225
Observations during Five Year Review Site Inspection

Dear Mr. Belmore:

This letter is to document my observations and recommendations during the Five Year Review Site Inspection that I performed on June 9, 2010. Attached you will find the photographs with their description.

At approximately 10:30 AM I met Geosyntec's senior staff geologists Ms. Laura Morales and Mr. Christopher Sullivan. At that time they were performing a hydraulic pump test on well cluster CTW-20. Ms. Morales explained to me their plan for the day and I expressed my interest in seeing the wells along the chemical treatment wall (CTW), the extraction well, the infiltration gallery, and the landfill gas vents.

Ms. Morales and I saw the extraction well, its vault and the infiltration gallery. After this I proceeded to inspect each one of the wells along the CTW and at the edge of the landfill. Then, I walked around the landfill gas vents area and left the site at approximately 1:00 PM.

The following are my observations and recommendations:

A. Extraction well and vicinity

- The identification mark for well B-12R is fading and it is barely legible. I recommend that it be re-marked or labelled with a durable paint for exteriors. The well identification should also be etched into the metal casing as a precaution.

B. Extraction well vault

- The lower part of the electrical panel (breakers and outlets) was partially open and unlocked. It should be locked with a heavy gauge padlock.
- The vault doors were unlocked. They should be locked with a heavy gauge padlock at all times.
- The vault floor had standing water and mud. The floor should be hosed and sweeped after every use.

C. Infiltration gallery

- The bolts around the man-hole cover were loose enough to be manually removed. They should be tightened with a wrench.
- There was no lock for the manhole cover. Either a metal bar across the cover or a modified piece of rebar with a heavy gauge padlock should be installed.
- We could not gain access to the interior of the gallery. A piece of rebar or some other tool to open the manhole cover must be available.

D. CTW wells

- None of the well had flagging to indicate its location to vehicles and pedestrians. I recommend that a six feet tall bright yellow or orange flag be attached to one of the wells at each CTW cluster plus any other well adjacent to the dirt road.
- Well CTW-10U has a concrete pipe section around it; however it is too narrow and barely offers space for maintenance and sampling activities. I recommend that this concrete pipe section be moved outside of the well and another two concrete pipe sections or big tall rocks be placed around it, similar to those currently surrounding the CTW-20 cluster.
- Vegetation around all wells was overgrown. It should be kept low to facilitate safe access to the wells.
- I could not identify the well cluster between CTW-10U and CTWIDR/U. Please identify. One of the wells at this cluster, had no lock nor a latch attached to the outer casing. Please note that all wells, even those not currently in use must be locked. I recommend the type of lock where the entire lock is protected by the well cover.
- The two outermost (down gradient) wells at cluster CTWIDR/U were not locked and one of them had a bee hive under the cover. All wells abandoned or not, must be kept locked with heavy gauge padlocks at all times. I recommend that at the very beginning of every field event, all wells be visually checked for this and that findings be recorded and included on the annual reports.

E. Landfill gas vents

- Vents VP-6 and VP7 were not secured with tie downs and were not totally upright. These vents must be straightened up and properly secured to the ground. Please note that this was the same observation I communicated to you via letter on November 13, 2009. To this date I have not received written communication from you regarding steps taken to correct this and dates where corrective actions were performed.

For your information, I have coordinated a second site inspection with Mr. Norm LeClerc on June 29, 2010. My objective is to drive as much as possible along the GMZ boundary, and interview both Mr. LeClerc and an adjacent resident. Lastly, I thank you for the GMZ Map and the list of residents; it will surely help during my next inspection.

Sincerely,

Gerardo Millán-Ramos
Site Assessment Manager / Remedial Project Manager
Office of Site Remediation and Restoration

cc:	Mr. David West, Mr. Ed Jamison	General Electric
	Attorney Mark Beliveau	Pease Atwood LLP
	Mr. Joseph Donovan	NHDES
	Ms. Suzzane O'Hara, Mr. Tom Krug	GeoSyntec
	Mr. Norm Leclerc	City of Somersworth

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Site Inspection Checklist

I. SITE INFORMATION	
Site name: Somersworth Sanitary Landfill	**Date(s) of inspection:** June 9, 2010 and June 29, 2010
Location and Region: Blackwater Road, Somersworth New Hampshire 03878	**EPA ID:** NHD980520225
Agency, office, or company leading the five-year review: U.S. EPA Region 1 – New England, Office of Site Remediation and Restoration	**Weather/temperature:** June 9, 2010: Sunny / 78° F June 29, 2010: Partially Cloudy/ 80°F

Remedy Includes: (Check all that apply)

- ■ Landfill cover/containment
- ☐ Access controls
- ■ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ■ Other Permeable Reactive Barrier
- ■ Monitored natural attenuation
- ■ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ■ Site map attached (See figure 3 in Second Five Year Review Report)

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. Problems, suggestions; ☐ Report attached
   _____
   _____

2. **O&M staff** _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____
   _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency New Hampshire Department of Environmental Services – Hazardous Waste Remediation Bureau
Contact Mr. Joseph Donovan (Name) Project Manager (Title) 603 271-6811 (Date Phone no.)
Problems; suggestions; ■ Report attached *Maintenance activities for the extraction well should be maintained and if necessary increased in frequency to sustain an adequate pumping rate.*

Agency City of Somersworth
Contact Mr. Norm LeClerc (Name) Landfill Project Coordinator (Title) 603 431-0120 (Date Phone no.)
Problems; suggestions; ■ Report attached *Do sampling on a yearly basis as it seems reasonable based on the data available and Geosyntec's recommendations.*

Agency n/a
Contact Ms. Margaret Aikens (Name) Private citizen (Title) 603-692-3474 (Date Phone no.)
Problems; suggestions; ■ Report attached No suggestions offered.

Agency _____
Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone no.)
Problems; suggestions; ☐ Report attached _____

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - ☐ O&M manual — ☐ Readily available — ☐ Up to date — ■ N/A
   - ☐ As-built drawings — ☐ Readily available — ☐ Up to date — ■ N/A
   - ☐ Maintenance logs — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks _____

2. **Site-Specific Health and Safety Plan** — ☐ Readily available — ■ Up to date — ☐ N/A
   - ☐ Contingency plan/emergency response plan — ☐ Readily available — ■ Up to date — ☐ N/A

   Remarks _____

3. **O&M and OSHA Training Records** — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks _____

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ■ N/A
   - ☐ Effluent discharge — ☐ Readily available — ☐ Up to date — ■ N/A
   - ☐ Waste disposal, POTW — ☐ Readily available — ☐ Up to date — ■ N/A
   - ☐ Other permits _____ — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks _____

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks _____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks _____

7. **Groundwater Monitoring Records** — ☐ Readily available — ■ Up to date — ☐ N/A

   Remarks _____

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks _____

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — ■ N/A
   - ☐ Water (effluent) — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks _____

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — ■ N/A

    Remarks _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ■ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date
■ Funding mechanism/agreement in place
Original O&M cost estimate _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

From _____ To _____ _____ ☐ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: n/a

V. ACCESS AND INSTITUTIONAL CONTROLS ■ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☐ N/A

Remarks There is no fencing around the extraction well's vault and control panel.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐N/A

Remarks Please see narrative of site inspection in the attached letter.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ■ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ■ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Self-reporting
Frequency Annual
Responsible party/agency City of Somersworth
Contact Mr. Norm LeClerc (Name) Landfill Project Coordinator (Title) 603 431-0120 (Date Phone no.)

Reporting is up-to-date ■ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ■ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ■ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ■ N/A
Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☐ ICs are adequate ■ ICs are inadequate ☐ N/A

Remarks The City's ordinance if an effective tool preventing exposures to the contaminated groundwater and the PLC and its operation and maintenance are effective barriers against direct exposure to wastes and contaminated soils but there is a need for specific land use restrictions to protect the integrity of the PLC and prevent tampering with it and any of the other components of the remedy.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ■ No vandalism evident

Remarks

2. **Land use changes on site** ■ N/A

Remarks

3. **Land use changes off site** ■ N/A

Remarks

VI. GENERAL SITE CONDITIONS

A. Roads ■ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ■ Roads adequate ☐ N/A

Remarks

B. Other Site Conditions

Remarks _____

VII. LANDFILL COVERS ■ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ■ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Cracks** ■ Location shown on site map ☐ Cracking not evident
   Lengths_____ Widths_____ Depths unknown_____
   Remarks Tennis courts show cracks due most probably to frost heave.

3. **Erosion** ☐ Location shown on site map ■ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Holes** ☐ Location shown on site map ■ Holes not evident
   Areal extent_____ Depth_____
   Remarks_____

5. **Vegetative Cover** ■ Grass ■ Cover properly established ■ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____

6. **Alternative Cover (armored rock, concrete, etc.)** ■ N/A
   Remarks_____

7. **Bulges** ☐ Location shown on site map ■ Bulges not evident
   Areal extent_____ Height_____
   Remarks_____

8. **Wet Areas/Water Damage** ■ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ■ No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches ☐ Applicable ■ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ■ N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map ■ N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map ■ N/A or okay
Remarks_____

C. Letdown Channels ■ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ■ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ■ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ■ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ■ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ■ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
■ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations ■ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ■ Passive
☐ Properly secured/locked ■ Functioning ■ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ■ Needs Maintenance
☐ N/A
Remarks Gas vents VP6 and VP7 need to be straightened up and secured with tie downs. **CHECK ALL**
OTHERS_____

2. **Gas Monitoring Probes**
■ Properly secured/locked ■ Functioning ■ Routinely sampled ■ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
■ Properly secured/locked ■ Functioning ■ Routinely sampled ■ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ■ N/A
Remarks_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ■ N/A
Remarks_____

E. Gas Collection and Treatment ☐ Applicable ■ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks n/a

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ■ Needs Maintenance
   Remarks See remarks on D.1 above.

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ■ N/A
   Remarks_____

F. Cover Drainage Layer ☐ Applicable ■ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks_____

G. Detention/Sedimentation Ponds ☐ Applicable ■ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____

H. Retaining Walls ☐ Applicable ■ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ■ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ■ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____

C. Treatment System ■ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   ☐ Air stripping ☐ Carbon adsorbers
   ☐ Filters _____
   ☐ Additive (*e.g.*, chelation agent, flocculent) _____
   ■ Others Elemental Iron Permeable Reactive Barrier (PRB) plus a permeable cover and extraction of groundwater with recirculation through the PRB.
   ■ Good condition ■ Needs Maintenance
   ☐ Sampling ports properly marked and functional
   ☐ Sampling/maintenance log displayed and up to date
   ☐ Equipment properly identified
   ☐ Quantity of groundwater treated annually _____
   ☐ Quantity of surface water treated annually _____
   Remarks See narrative of attached letter/reports.

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐ N/A ☐ Good condition ■ Needs Maintenance
   Remarks See narrative of attached letter.

3. **Tanks, Vaults, Storage Vessels**
   ☐ N/A ☐ Good condition ☐ Proper secondary containment ■ Needs Maintenance
   Remarks See narrative of attached letter.

4. **Discharge Structure and Appurtenances**
   ☐ N/A ☐ Good condition ■ Needs Maintenance
   Remarks See narrative of attached letter.

5. **Treatment Building(s)**
   ■ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
   ☐ Chemicals and equipment properly stored
   Remarks _____

6. **Monitoring Wells** (pump and treatment remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance ■ N/A
   Remarks _____

D. Monitoring Data

1. Monitoring Data
   ■ Is routinely submitted on time ■ Is of acceptable quality

2. Monitoring data suggests:
   ■ Groundwater plume is effectively contained ■ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ■ Needs Maintenance ☐ N/A
Remarks See narrative of attached letter/reports.

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy, a chemical treatment wall (CTW), a permeable landfill cover, the extraction of bedrock groundwater and infiltration of it on top of the landfill (to be treated by the CTW), landfill gas vent trench with passive ventilation, landfill gas monitoring plus monitored natural attenuation of the groundwater and Institutional Controls, aims to prevent exposure to groundwater contaminated with chlorinated ethenes, contain the plume of contaminated groundwater and the migration of landfill gas, and treat the contaminated groundwater. The remedy appears to be effective and functioning as designed. However a few deficiencies were noted on the security/safety of some components. Such deficiencies were reported to the SDs via letter and most of them were observed to be corrected at a second site inspection.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The issues and observations noted during the site inspections (please see the attached letters for details), have no bearing on the current protectiveness of the remedy but they do have the potential to compromise it future protectiveness. The lack of security measures on some components of the remedy such as monitoring wells and the extraction well vault could make the remedy vulnerable to vandalism and could create exposure to trespassers.

C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. None at this time.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. None at this time.

ATTACHMENT H

FURTHER REQUIREMENTS TO ENSURE PROTECTIVENESS AT PROPOSED RECREATIONAL FACILITIES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
ONE CONGRESS STREET SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

February 15, 2007

Mr. Robert Belmore
City Manager
One Government Way
Somersworth, NH 03878

Re: Somersworth Sanitary Landfill
Somersworth NH
EPA ID: NHD980520225

Dear Mr. Belmore:

Per your request during our telephone conversation on Friday February 9, this letter describes the additional requirements that both EPA and NH DES are requesting in order to ensure the health and safety of future users of the landfill. It also includes references and copies of the regulatory materials that substantiate our decision.

After thoroughly reviewing the site's Record of Decision, the applicable federal and state regulations and policies, and the remedies put in place at other similar sites in New Hampshire, EPA Region 1 has concluded that the existing Permeable Landfill Cover (PLC) at the Somersworth Sanitary Landfill is not sufficient protection for the users of the proposed re-use, i.e. soccer fields.

We acknowledge this may be contrary to the message you received from EPA and NHDES during our meeting at your Office on January 23, 2007. Nonetheless, in order to avoid misunderstandings and protracted discussions that would hinder progress on the re-development of this site, and in order to completely fulfill our mission of protecting human health and the environment, we believe the following sequence of actions is necessary:

1. Verification of the depth of the existing PLC: The PLC shall have a minimum depth of 12 inches. This could be done via manually driven core-samples located on a grid across the landfill. Please note there is no need for any additional chemical analysis of the existing PLC if the following sequence of actions are performed. However, as noted in item 1a. of your January 31, 2007 letter, a "R(r)eview of prior records to outline and substantiate the nature

and composition of fill material placed upon the area regarding it being "clean", i.e. free of harmful contaminants/VOCs" should still be performed.

2. Replenishment of the existing PLC with "clean" fill material wherever the minimum depth (12 inches) is absent.

3. Installation of a geo-textile warning layer on top of the PLC, in those areas where re-use is being proposed. We suggest the use of the same material used at the New Hampshire Plating Co. site in Merrimack New Hampshire. Please see attached certification from the manufacturer for a description of the material and its properties.

4. Placement of an additional 12 inches of "clean" soil on top of the geo-textile warning layer. The soils should be analytically tested at the source to confirm they are free of hazardous substances. At a minimum, the analyses shall include Inorganics (metals), Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), Pesticides and Polychlorinated Biphenyl (PCBs). This additional 12 inch layer of soil shall also consist of whatever amount of top-soil you deem necessary to grow turf.

The result of these actions should provide for a minimum of 24 inches of cover material and a warning layer above the existing landfill waste material.

The basis for these requirements is the following:

1. **Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities – Federal Standard - 40 CFR 264 Subpart G; State Standard – NH Env-Wm 708.02(a)(12) (Closure and Post Closure).** These standards are applicable regulations (ARARs) for this site and specifically, 40 CFR 264.117(c) (which is incorporated into Env-Wm 708.02(a)(12)) mandates that the integrity of the final cover must not be disturbed by any post-closure use of property in which hazardous wastes remain. Please see enclosed letter from NH DES dated February 2, 2007 for more information.

2. **Consistency with the remedy put in place at the New Hampshire Plating Co. site in Merrimack New Hampshire.** At this site, wastes were covered with a combination of a warning layer, common fill and top soil that amounts to a total of 24 inches of cover materials. Therefore, undertaking the additional work described above will ensure consistency with remedies at other sites of this type. Please see enclosed cross-section of the cover system for your reference.

Further justification for the requirements is provided by the following state rule and policy:

1. **New Hampshire Code of Administrative Rules – Env.–Sw 805.10 Landfill Capping System Design Standards.** These rules call for a minimum of 12 inches of unspecified soil directly on top of the waste, followed by another 12 inches of sand plus three other layers. This further supports our rationale that 24 inches of cover materials should be the minimum barrier between the wastes at the Somersworth Landfill and any future recreational users of the landfill.

4. **NH DES Contaminated Sites Risk Characterization and Management Policy (RCMP).** This policy is also consistent with our request that a minimum of 12 inches of additional cover materials should lie on top of the wastes at the Somersworth Landfill. Section 3.3(4)(c)(1) characterizes soil as accessible *if it is located less than two feet below the surface and the surface is not completely covered by pavement or materials that are functionally equivalent to pavement.*

Should you have any questions or concerns about these requirements, you may contact me at (617) 918-1377 or Mike Jasinski at (617) 918-1352.

Sincerely,

Gerardo Millán-Ramos
Acting Remedial Project Manager
Office of Site Remediation and Restoration

cc	Andrew Hoffman (w/o enclosure)	NH DES
	Pamela Schnepper (w/o enclosure)	NH DES
	Richard Pease (w/o enclosure)	NH DES
	Margaret McDonough (w/o enclosure)	EPA-Region 1
	Mike Jasinski (w/o enclosure)	EPA-Region 1
	David Peterson (w/o enclosure)	EPA-Region 1

C:/MyDocuments/Somersworth/Additionalreqslet.doc

ATTACHMENT I
DATA SUMMARY PACKAGE FOR AREA SOUTH OF BLACKWATER ROAD

Geosyntec consultants

130 Research Lane, Suite 2
Guelph, Ontario, Canada N1G 5G3
PH 519.822.2230
FAX 519.822.3151
www.geosyntec.com

August 20, 2010

Gerardo Millán-Ramos
Site Assessment Manager/Remedial Project Manager
Office of Site Remediation and Restoration, Region I EPA
5 Post Office Square
Suite 100
Boston, Massachusetts 02109-3946

Re: Data Summary Package for the Area South of Blackwater Road, Somersworth Sanitary Landfill Superfund Site, Somersworth, New Hampshire

Dear Mr. Millán-Ramos:

On behalf of the Work Settling Defendants (WSDs) for the Somersworth Sanitary Landfill Superfund Site (the "Site"), Geosyntec Consultants (Geosyntec) has compiled the existing volatile organic compound (VOC) groundwater data and geology data for the area south of Blackwater Road proximal to the Somersworth Sanitary Landfill site. The EPA has requested these data to evaluate the potential risk of vapor intrusion to the homes located in this area. Geosyntec has compiled the historical groundwater chemistry data, the water table elevation data and depth to bedrock/overburden contact and presented these data on a cross section that runs along the southern side of Blackwater Road. (Figure 6; Figure 6 if it is to be included in the 2nd Five Year Review Report) and also present the groundwater VOC data in Table 5 (again, Table 5 if it is to be included in the Five Year Review Report).

A review of the historical Site data demonstrates that it supports the conceptual model that the VOCs in the area south of Blackwater Road are in the bedrock, that the shallow groundwater in the overburden does not exhibit elevated concentrations of VOCs, and therefore, there is no pathway for potential vapor intrusion to the surface. Historical data indicate that VOCs have been present in the bedrock groundwater at concentrations up to 9,144 micrograms per liter (µg/L). Low concentrations of VOCs were observed in the 1990s in monitoring well B-13L located over 800 feet to the west of the homes. The highest concentrations of VOCs observed in the area are in bedrock well B-12R. Despite the lack of recent data from overburden monitoring well B-12L, which is nested with B-12R and is now used as a piezometer, samples collected concurrently from the two wells in 1989, 1990, and 1992 showed non-detect concentrations in samples from B-12L and some of the highest VOC concentrations measured in B-12R. If no VOCs were present in the overburden groundwater in the late 1980s and early 1990s when concentrations were highest in B-12R, then it is extremely unlikely that VOCs are present in the

overburden groundwater now that the concentrations in B-12R have diminished significantly over the years (601 µg/L TVOCs in 2009).

In addition, the overburden is continuous and the water table is positioned in the overburden across this entire area (confirmed by well B-13WT and soil gas probe (SGP) 1, 2 and 3, which are all screened across the water table) corroborating that the a continuous clean water lens exists between the deeper bedrock groundwater and the ground surface.

We trust that these data satisfy your request and provide sufficient documentation. Please let us know if you have additional questions or comments.

Sincerely,

Suzanne O'Hara, M.Sc.
Project Manager

Thomas A. Krug, M.Sc., P.Eng.
Associate

cc: Norm Leclerc, City of Somersworth
Robert Belmore, City of Somersworth
Edward Jamison, General Electric Company
Dave West, General Electric Company

TABLE 5
GROUNDWATER LABORATORY DATA SOUTH OF BLACKWATER ROAD
Somersworth Sanitary Landfill Superfund Site, New Hampshire

Location	Date Sampled	QA/QC Sample Type	Matrix	Benzene (µg/L)	DCM (µg/L)	1,1-DCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	PCE (µg/L)	TCE (µg/L)	VC (µg/L)
B-12R	12-Dec-86	--	Purge	5.0 U	--	--	58	--	--	2,000	--
	14-Nov-89	--	Purge	5.0 U	2.0	5.0 U	120	--	2.0 J	6,200 E	14
	19-Mar-90	--	Purge	1.0	2.0 B	2.0	120	--	4.0	9,000	17
	21-Jan-92	--	Purge	1.0 U	1.0 U	2.0	39	--	3.0	210	25
	12-Mar-92	--	Purge	10 U	20 U	10 U	120	--	10 U	5,400	40 U
	12-Mar-92	Field Duplicate	Purge	10 U	20 U	10 U	120	--	10 U	5,400	40 U
	11-Mar-96	--	Purge	50 U	50 U	50 U	32 J	50 U	50 U	1,900	20 U
	12-Jul-96	--	Purge	50 U	50 U	50 U	30 J	50 U	50 U	2,000	20 U
	11-Jan-97	--	Purge	360 U	360 U	360 U	24 J	360 U	360 U	1,200	140 U
	18-Mar-97	--	Purge	50 U	50 U	50 U	30 J	50 U	50 U	2,000	20 U
	11-Jul-97	--	Purge	25 U	25 U	25 U	34	25 U	25 U	1,700	7.4 J
	11-Jul-97	Field Duplicate	Purge	25 U	25 U	25 U	34	25 U	25 U	1,700	6.4 J
	03-Mar-98	--	Purge	50 U	50 U	50 U	34 J	50 U	50 U	1,900	20 U
	29-Dec-99	--	Purge	100 U	100 U	100 U	100 U	100 U	100 U	2,000	40 U
	11-Jan-01	--	PDB	100 U	100 U	100 U	100 U	100 U	100 U	2,200	40 U
	14-May-01	--	PDB	50 U	50 U	50 U	50 U	50 U	50 U	1,100	20 U
	19-Jul-01	--	PDB	50 U	50 U	50 U	50 U	50 U	50 U	1,400	20 U
	12-Oct-01	--	PDB	130 U	130 U	130 U	130 U	130 U	130 U	1,600	50 U
	12-Oct-01	Field Duplicate	PDB	130 U	130 U	130 U	130 U	130 U	130 U	1,600	50 U
	23-Apr-02	--	PDB	130 U	130 U	130 U	130 U	130 U	130 U	2,700	50 U
	23-Apr-02	Field Duplicate	PDB	130 U	130 U	130 U	130 U	130 U	130 U	2,600	50 U
	25-Jul-02	--	PDB	250 U	250 U	250 U	250 U	250 U	250 U	5,100	100 U
	17-Oct-02	--	PDB	500 U	500 U	500 U	500 U	500 U	500 U	7,200	200 U
	23-Apr-03	--	PDB	250 U	250 U	250 U	250 U	250 U	250 U	4,000	100 U
	15-Jul-03	--	PDB	250 U	250 U	250 U	250 U	250 U	250 U	4,400	100 U
	17-Oct-03	--	PDB	250 U	250 U	250 U	250 U	250 U	250 U	6,100	100 U
	19-Apr-04	--	PDB	250 U	250 U	250 U	250 U	250 U	250 U	3,900	100 U
	20-Jul-04	--	PDB	100 U	100 U	100 U	140	100 U	100 U	1,600	40 U
	22-Oct-04	--	PDB	250 U	250 U	250 U	250 U	250 U	250 U	4,700	100 U
	21-Apr-05	--	PDB	50 U	50 U	50 U	50 U	50 U	50 U	1,300	20 U
	25-Aug-05	--	PDB	130 U	130 U	130 U	130 U	130 U	130 U	3,400	50 U
	20-Oct-05	--	PDB	130 U	130 U	130 U	130 U	130 U	130 U	2,500	50 U
	12-Apr-06	--	PDB	130 U	130 U	130 U	130 U	130 U	130 U	1,800	50 U
	05-Jul-06	--	PDB	100 U	100 U	100 U	100 U	100 U	100 U	1,600	40 U
	24-Oct-06	--	PDB	50 U	50 U	50 U	61	50 U	50 U	1,400	20 U
	26-Apr-07	--	PDB	50 U	50 U	50 U	56	50 U	50 U	1,200	20 U
	30-Jul-07	--	PDB	25 U	25 U	25 U	31	25 U	25 U	630	10 U
	24-Oct-07	--	PDB	50 U	50 U	50 U	50 U	50 U	50 U	720	20 U
	23-Apr-08	--	PDB	25 U	25 U	25 U	42	25 U	25 U	710	10 U
	04-Nov-08	--	PDB	50 U	50 U	50 U	50 U	50 U	50 U	950	20 U
	02-Nov-09	--	PDB	5.0 U	5.0 U	5.0 U	21	5.0 U	5.0 U	580	5.0 U
B-12L	14-Nov-89	--	Purge	5.0 U	5.0 U	5.0 U	1J	--	5.0 U	5.0 U	10.0 U
	19-Mar-90	--	Purge	5.0 U	5.0 U	5.0 U	2	--	5.0 U	5.0 U	10.0U
	21-Jan-92	--	Purge	1.0 U	3B	1.0 U	1.0 U	--	1.0 U	1.0 U	2.0 U
B-13R	12-Dec-86	--	Purge	--	--	--	21	--	--	13	--
	14-Nov-89	--	Purge	5.0 U	5.0 U	5.0 U	18	--	5.0 U	21	4.0 J
	12-Mar-92	--	Purge	1.5	2.0 U	2.5	70 E	--	1.0 U	26	21
	08-Mar-96	--	Purge	1.6 J	5.0 U	1.2 J	72	5.0 U	5.0 U	4.5 J	17
	12-Jul-96	--	Purge	1.4 J	5.0 U	5.0 U	54	1.0 J	5.0 U	9.0	9.7
	11-Jan-97	--	Purge	1.0 J	18 U	2.0 J	53	2.0 J	18 U	5.0 J	7.0 U
	12-Jul-97	--	Purge	1.5 J	5.0 U	5.0 U	50	1.7 J	5.0 U	8.2	14
	04-Mar-98	--	Purge	1.3 J	5.0 U	1.3 J	53	1.8 J	5.0 U	5.2	12
	08-Dec-99	--	Purge	5.0 U	5.0 U	5.0 U	36	5.0 U	5.0 U	7.2	6.3
	11-Jan-01	--	PDB	5.0 U	5.0 U	5.0 U	36	5.0 U	5.0 U	5.0 U	13
	23-Apr-01	--	PDB	5.0 U	5.0 U	5.0 U	47	5.0 U	5.0 U	5.0 U	19
	19-Jul-01	--	PDB	5.0 U	5.0 U	5.0 U	37	5.0 U	5.0 U	5.0 U	8.6
	12-Oct-01	--	PDB	5.0 U	5.0 U	5.0 U	30	1.0 J	5.0 U	4.4 J	8.0
	23-Apr-02	--	PDB	5.0 U	5.0 U	5.0 U	35	5.0 U	5.0 U	5.0 U	11
	25-Jul-02	--	PDB	5.0 U	5.0 U	5.0 U	36	5.0 U	5.0 U	5.0 U	11
	17-Oct-02	--	PDB	5.0 U	5.0 U	5.0 U	37	1.2 J	5.0 U	7.1	2.0 U
	23-Apr-03	--	PDB	5.0 U	5.0 U	5.0 U	34	5.0 U	5.0 U	5.0 U	14
	17-Jul-03	--	PDB	5.0 U	5.0 U	5.0 U	31	5.0 U	5.0 U	5.0 U	13
	17-Oct-03	--	PDB	5.0 U	5.0 U	5.0 U	28	5.0 U	5.0 U	2.9 J	6.6
	19-Apr-04	--	PDB	5.0 U	5.0 U	5.0 U	34	5.0 U	5.0 U	5.0 U	13
	20-Jul-04	--	PDB	5.0 U	5.0 U	5.0 U	32	5.0 U	5.0 U	5.0 U	14
	22-Oct-04	--	PDB	5.0 U	5.0 U	5.0 U	27	5.0 U	5.0 U	5.0 U	10
	20-Apr-05	--	PDB	5.0 U	5.0 U	5.0 U	36	5.0 U	5.0 U	5.0 U	13
	25-Aug-05	--	PDB	5.0 U	5.0 U	5.0 U	27	5.0 U	5.0 U	5.0 U	10
	20-Oct-05	--	PDB	0.95 J	0.34 J	0.44 J	25	0.93 J	5.0 U	2.0 J	13
	12-Apr-06	--	PDB	5.0 U	5.0 U	5.0 U	31	5.0 U	5.0 U	5.0 U	12
	05-Jul-06	--	PDB	5.0 U	5.0 U	5.0 U	27	5.0 U	5.0 U	5.0 U	12
	24-Oct-06	--	PDB	5.0 U	5.0 U	5.0 U	24	5.0 U	5.0 U	5.0 U	9.5
	26-Apr-07	--	PDB	5.0 U	5.0 U	5.0 U	26	5.0 U	5.0 U	5.0 U	10
	30-Jul-07	--	PDB	5.0 U	5.0 U	5.0 U	26	5.0 U	5.0 U	5.0 U	13
	24-Oct-07	--	PDB	5.0 U	5.0 U	5.0 U	13	5.0 U	5.0 U	5.0 U	9.2
	23-Apr-08	--	PDB	5.0 U	5.0 U	5.0 U	24	5.0 U	5.0 U	5.0 U	14
	04-Nov-08	--	PDB	5.0 U	5.0 U	5.0 U	21	5.0 U	5.0 U	5.0 U	8.6
	02-Nov-09	--	PDB	1.0 U	1.0 U	1.0 U	16	1.0 U	1.0 U	1.0 U	9.3
B-13L	12-Dec-86	--	Purge	5.0U	-	24.1	30.2	--	-	11.3	--
	14-Nov-89	--	Purge	5.0U	5.0U	5.0U	4J	--	5.0U	5.0U	1J
	12-Mar-92	--	Purge	1.30	2.0U	1.60	6.70	--	1.0U	1.0U	26
	08-Mar-96	--	Purge	1.4J	5.0U	1.3J	2.2J	5.0U	5.0U	5.0U	17
	12-Jul-97	--	Purge	1.4J	5.0U	1.7J	3.1J	5.0U	5.0U	5.0U	14

TABLE 5
GROUNDWATER LABORATORY DATA SOUTH OF BLACKWATER ROAD
Somersworth Sanitary Landfill Superfund Site, New Hampshire

Location	Date Sampled	QA/QC Sample Type	Matrix	Benzene (µg/L)	DCM (µg/L)	1,1-DCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	PCE (µg/L)	TCE (µg/L)	VC (µg/L)
B-13WT	12-Dec-86	--	Purge	--	--	--	5.0 U	--	--	--	--
	08-Apr-96	--	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	12-Jul-97	--	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.8**
	08-Dec-99	--	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.2**
	11-Jan-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Apr-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	19-Jul-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	12-Oct-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Apr-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Jul-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Apr-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Jul-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Oct-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Oct-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**0.44 J**
	20-Oct-05	Field Duplicate	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**0.41 J**
	24-Oct-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Oct-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	04-Nov-08	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
BRW-1	18-Mar-97	--	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**1.2 J**	**2.9 J**	2.0 U
	18-Mar-97	--	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**1.6 J**	**84**	2.0 U
	18-Mar-97	--	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**1.6 J**	**65**	2.0 U
	18-Mar-97	Field Duplicate	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**1.4 J**	**92**	2.0 U
	19-Oct-01	--	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Apr-02	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**16**	2.0 U
	22-Jul-02	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**32**	2.0 U
	16-Oct-02	--	sample tap	5.0 U	5.0 U	5.0 U	**5.8**	5.0 U	5.0 U	**50**	**5.2**
	22-Apr-03	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**31**	2.0 U
	16-Oct-03	--	sample tap	5.0 U	5.0 U	5.0 U	**6.3**	5.0 U	5.0 U	**64**	**3.8**
	21-Apr-04	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**37**	2.0 U
	22-Jul-04	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**30**	**2.1**
	19-Oct-04	--	sample tap	5.0 U	5.0 U	5.0 U	**7.5**	5.0 U	5.0 U	**43**	**5.0**
	23-Aug-05	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**32**	2.0 U
	20-Oct-05	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**38**	2.0 U
	14-Apr-06	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**43**	2.0 U
	06-Jul-06	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**26**	2.0 U
	24-Oct-06	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**38**	2.0 U
	26-Apr-07	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**10**	2.0 U
	01-Aug-07	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**7.8**	2.0 U
	25-Oct-07	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**31**	2.0 U
	22-Apr-08	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**11**	2.0 U
	07-Nov-08	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**18**	2.0 U
	03-Nov-09	--	sample tap	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**7.6**	2.0 U
OB-22R	02-Feb-01	--	Purge	5.0 U	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Apr-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	19-Jul-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	12-Oct-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**3.1**
	23-Apr-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**3.9**
	25-Jul-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.9**
	17-Oct-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.6**
	23-Apr-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.5**
	18-Jul-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	19-Apr-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Jul-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Oct-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Oct-04	Field Duplicate	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Apr-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Aug-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Oct-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	12-Apr-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.0**
	05-Jul-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Oct-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.8**
	26-Apr-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	30-Jul-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.5**
	24-Oct-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.5**
	23-Apr-08	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.0**
	04-Nov-08	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.0**
	02-Nov-09	--	PDB	**2.3**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.4**
OB-23R	29-Jan-01	--	Purge	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**95**	2.0 U
	24-Apr-01	--	PDB	50 U	50 U	50 U	**73**	50 U	50 U	**1,200**	20 U
	19-Jul-01	--	PDB	25 U	25 U	25 U	**53**	25 U	25 U	**580**	10 U
	19-Jul-01	Field Duplicate	PDB	25 U	25 U	25 U	**52**	25 U	25 U	**560**	10 U
	12-Oct-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**13**	2.0 U
	24-Apr-02	--	PDB	50 U	50 U	50 U	50 U	50 U	50 U	**900**	20 U
	25-Jul-02	--	PDB	25 U	25 U	25 U	**50**	25 U	25 U	**650**	10 U
	25-Jul-02	Field Duplicate	PDB	25 U	25 U	25 U	**51**	25 U	25 U	**630**	10 U
	17-Oct-02	--	PDB	5.0 U	5.0 U	5.0 U	**6.7**	5.0 U	5.0 U	**110**	**10**
	23-Apr-03	--	PDB	5.0 U	5.0 U	5.0 U	**36**	5.0 U	5.0 U	**150**	**9.1**
	15-Jul-03	--	PDB	5.0 U	5.0 U	5.0 U	**14**	5.0 U	5.0 U	**7.7**	**26**
	17-Oct-03	--	PDB	5.0 U	5.0 U	5.0 U	**13**	5.0 U	5.0 U	**6.6**	**14**
	19-Apr-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**6.8**	2.0 U
	20-Jul-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**2.4**
	22-Oct-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**7.6**	**2.6**

TABLE 5
GROUNDWATER LABORATORY DATA SOUTH OF BLACKWATER ROAD
Somersworth Sanitary Landfill Superfund Site, New Hampshire

Location	Date Sampled	QA/QC Sample Type	Matrix	Benzene (µg/L)	DCM (µg/L)	1,1-DCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	PCE (µg/L)	TCE (µg/L)	VC (µg/L)
OB-23R	21-Apr-05	--	PDB	10 U	10 U	10 U	37	10 U	10 U	210	4.5
	21-Apr-05	Field Duplicate	PDB	10 U	10 U	10 U	34	10 U	10 U	200	4.6
	25-Aug-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Oct-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	12-Apr-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	05-Jul-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Oct-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Apr-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	30-Jul-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Oct-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Oct-07	Field Duplicate	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Apr-08	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	04-Nov-08	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	02-Nov-09	--	PDB	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
OB-24R	29-Jan-01	--	Purge	100 U	100 U	100 U	550	100 U	100 U	1,400	40 U
	29-Jan-01	Field Duplicate	Purge	100 U	100 U	100 U	630	100 U	100 U	1,600	40 U
	25-Apr-01	--	Purge	100 U	100 U	100 U	630	100 U	100 U	1,700	51
	19-Jul-01	--	Purge	50 U	50 U	50 U	520	50 U	50 U	1,300	23
	15-Oct-01	--	Purge	50 U	50 U	50 U	450	50 U	50 U	1,100	20 U
	15-Oct-01	Field Duplicate	Purge	50 U	50 U	50 U	500	50 U	50 U	1,200	20 U
	26-Apr-02	--	Purge	50 U	50 U	50 U	530	50 U	50 U	1,300	26
	22-Jul-02	--	Purge	50 U	50 U	50 U	510	50 U	50 U	1,200	20 U
	16-Oct-02	--	Purge	50 U	50 U	50 U	520	50 U	50 U	1,400	20 U
	22-Apr-03	--	Purge	50 U	50 U	50 U	440	50 U	50 U	1,000	24
	15-Jul-03	--	Purge	50 U	50 U	50 U	400	50 U	50 U	940	20 U
	16-Oct-03	--	Purge	50 U	50 U	50 U	420	50 U	50 U	960	20 U
	21-Apr-04	--	Purge	50 U	50 U	50 U	390	50 U	50 U	860	22
	21-Apr-04	Field Duplicate	Purge	25 U	25 U	25 U	330	25 U	25 U	680	20
	22-Jul-04	--	Purge	25 U	25 U	25 U	340	25 U	25 U	610	22
	22-Jul-04	Field Duplicate	Purge	25 U	25 U	25 U	340	25 U	25 U	640	23
	21-Apr-05	--	Purge	25 U	25 U	25 U	290	25 U	25 U	700	54
	23-Aug-05	--	Purge	25 U	25 U	25 U	260	25 U	25 U	670	35
	18-Oct-05	--	Purge	0.58 J	5.0 U	4.1 J	110	2.3 J	5.0 U	20	190
	14-Apr-06	--	Purge	25 U	25 U	25 U	240	25 U	25 U	620	28
	27-Jul-06	--	Purge	10 U	10 U	10 U	150	10 U	10 U	230	63
	25-Oct-06	--	Purge	10 U	10 U	10 U	140	10 U	10 U	200	84
	24-Apr-07	--	Purge	25 U	25 U	25 U	210	25 U	25 U	520	24
	31-Jul-07	--	Purge	10 U	10 U	10 U	100	10 U	10 U	220	28
	22-Oct-07	--	Purge	13 U	13 U	13 U	140	13 U	13 U	320	45
	22-Apr-08	--	Purge	13 U	13 U	13 U	140	13 U	13 U	310	18
	22-Apr-08	Field Duplicate	Purge	13 U	13 U	13 U	140	13 U	13 U	330	18
	05-Nov-08	--	Purge	13 U	13 U	13 U	120	13 U	13 U	300	16
	02-Nov-09	--	Purge	0.64 J	5.0 U	5.2	76	4.0 J	5.0 U	260	20
OB-9R	08-Nov-90	--	Purge	5.0 U	8.0	5.0 U	5.0 U	--	5.0 U	5.0 U	10 U
	27-Jan-92	--	Purge	1.0 U	1.0 U	1.0 U	1.0 U	--	1.0 U	1.0 U	2.0 U
	14-May-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	19-Jul-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	12-Oct-01	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Apr-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Jul-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-02	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Apr-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	15-Jul-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	17-Oct-03	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	19-Apr-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Jul-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	22-Oct-04	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	21-Apr-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	25-Aug-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	20-Oct-05	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	12-Apr-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	05-Jul-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Oct-06	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	26-Apr-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	30-Jul-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	24-Oct-07	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	23-Apr-08	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	04-Nov-08	--	PDB	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
	02-Nov-09	--	PDB	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Notes:

µg\L	- micrograms per litre
E	- result exceeded calibration range
J	- indicates estimated value
U	- compound not detected; associated value is the quantitation limit
B	- compound detected in laboratory blank
--	- compound not analyzed for
1,1-DCE	- 1,1-dichloroethene
cDCE	- cis-1,2-dichloroethene
tDCE	- trans-1,2-dichloroethene
DCM	- methylene chloride
PCE	- tetrachloroethene
TCE	- trichloroethene
VC	- vinyl chloride
PDB	- passive diffusion bag

TABLE 6
SOIL GAS MONITORING FIELD MEASUREMENT DATA
Somersworth Sanitary Landfill Superfund Site, New Hampshire

Soil Gas Probe I.D.	Date Sampled	Cumulative Volume Removed (Litres)	PID Reading*1 (ppm)	Methane*2 (%)	Carbon Dioxide*2 (%)	Oxygen*2 (%)	Hydrogen Sulfide*2, (ppm)
SGP-09	22-Apr-05	1.40	0.00	0.00	0.00	20.90	0.00
	22-Apr-05	2.80	0.00	0.00	0.00	20.70	0.00
	22-Apr-05	4.20	0.00	0.00	0.00	20.90	0.00
	22-Aug-05	1.40	0.00	0.00	0.40	20.40	0.00
	22-Aug-05	2.80	0.00	0.00	0.70	20.40	0.00
	22-Aug-05	4.20	0.00	0.00	2.40	18.50	0.00
	18-Oct-05	1.40	--	0.00	4.40	17.20	0.00
	18-Oct-05	2.80	--	0.00	4.50	17.20	0.00
	18-Oct-05	4.20	--	0.00	4.20	17.50	0.00
	1-Nov-06	1.40	0.00	0.10	3.70	17.80	0.00
	1-Nov-06	2.80	0.00	0.10	4.30	17.30	0.00
	1-Nov-06	4.20	0.00	0.10	4.30	17.30	0.00
	26-Oct-07	1.40	0.00	0.00	3.90	17.20	0.00
	26-Oct-07	2.80	0.00	0.00	4.40	16.80	0.00
	26-Oct-07	4.20	0.00	0.00	3.40	17.70	0.00
	5-Nov-08	1.40	0.10	0.00	3.60	17.60	1.00
	5-Nov-08	2.80	0.10	0.00	3.80	17.70	0.00
	5-Nov-08	4.20	0.00	0.00	3.80	17.70	1.00
	5-Nov-09	1.40	0.00	0.00	5.90	15.10	0.00
	5-Nov-09	2.80	0.00	0.00	7.30	17.00	0.00
	5-Nov-09	4.20	0.00	0.00	7.40	15.00	0.00
SGP-10	22-Apr-05	1.40	0.00	0.00	1.00	19.20	0.00
	22-Apr-05	2.80	0.00	0.00	1.10	18.90	0.00
	22-Apr-05	4.20	0.00	0.00	1.20	18.80	0.00
	22-Aug-05	1.40	0.00	0.00	3.50	17.30	0.00
	22-Aug-05	2.80	0.00	0.00	3.20	17.70	0.00
	22-Aug-05	4.20	0.00	0.00	2.90	17.90	0.00
	18-Oct-05	1.40	--	0.00	2.00	19.30	0.00
	18-Oct-05	2.80	--	0.00	2.80	18.30	0.00
	18-Oct-05	4.20	--	0.00	2.70	18.40	0.00
	31-Oct-06	1.40	0.00	0.00	2.20	18.70	0.00
	31-Oct-06	2.80	0.00	0.00	2.30	18.60	0.00
	31-Oct-06	4.20	0.00	0.00	2.30	18.50	0.00
	26-Oct-07	1.40	0.00	0.10	2.30	18.00	0.00
	26-Oct-07	2.80	0.20	0.00	2.30	17.90	0.20
	26-Oct-07	4.20	0.20	0.00	2.40	17.80	0.00
	5-Nov-08	1.40	0.00	0.00	2.10	18.80	1.00
	5-Nov-08	2.80	0.00	0.00	2.10	18.70	0.20
	5-Nov-08	4.20	0.00	0.00	2.10	18.70	1.00
	5-Nov-09	1.40	0.20	0.00	2.10	19.70	0.00
	5-Nov-09	2.80	0.20	0.00	2.10	19.70	0.00
	5-Nov-09	4.20	0.20	0.00	2.10	19.60	0.00

Notes:
*1 - Total VOCs measured using a photo ionization detector (PID)
*2 - CH4, CO2, O2 and H2S measurements made using a Lanteck Gem 500 landfill gas monitoring instrument
-- - not available due to PID malfunction
% - percent
CH4 - methane
CO2 - carbon dioxide
H2S - hydrogen sulfide
O2 - oxygen
ppm - parts per million by volume
SGP - soil gas probe
VOCs - volatile organic compounds

ATTACHMENT J
SITE INSPECTION PHOTOGRAPHS

Figure 1 90 degree turn of GMZ boundary within residential neighborhood.

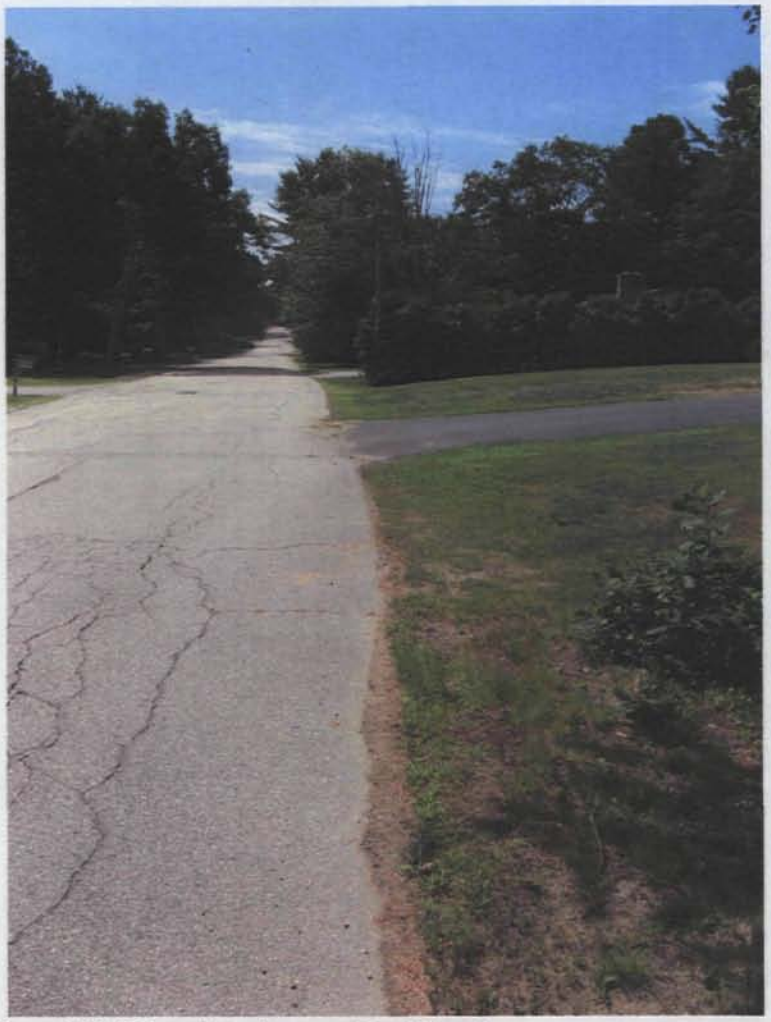

Figure 2 GMZ boundary along a residential road

Figure 3 Baseball and Basketball fields at southeastern corner of site. View from Park View Terrace Road facing west.

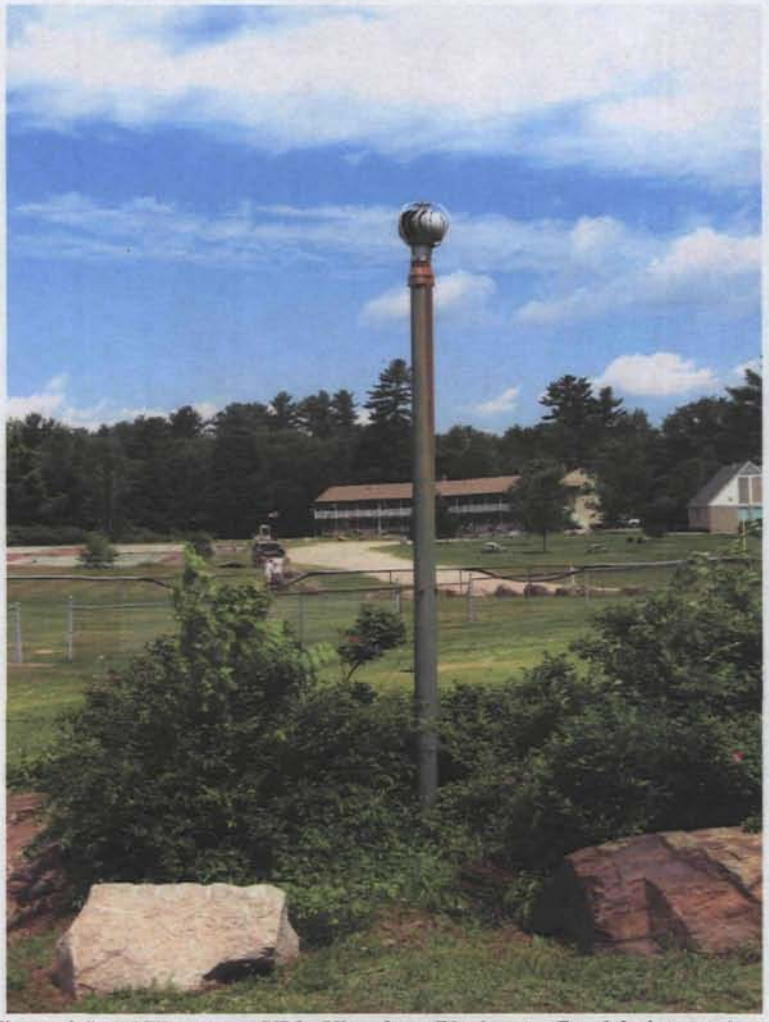

Figure 4 Landfill gas vent VP3. View from Blackwater Road facing north

Figure 5 Gas vent VP2. View from Park View Terrace Road facing south west.

Figure 6 Homes along Blackwater Road. View from Park View Terrace Road facing south west.

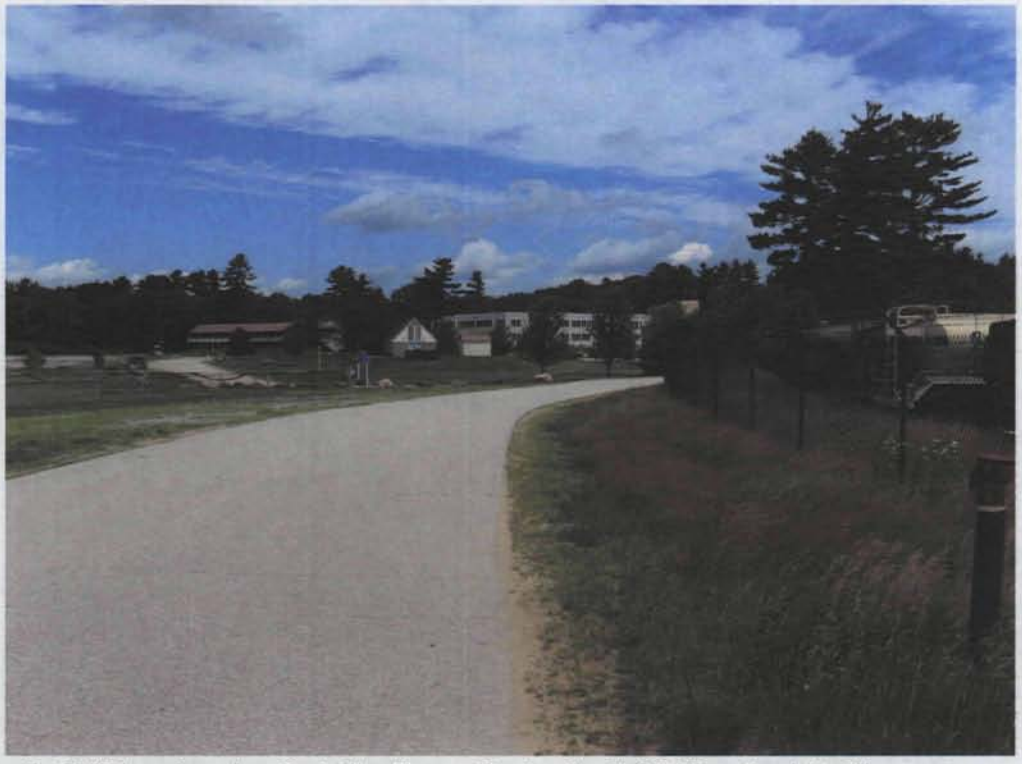

Figure 7: GMZ boundary along Park View Terrace Road and well OB-7R on the right. View from Blackwater Road facing north.

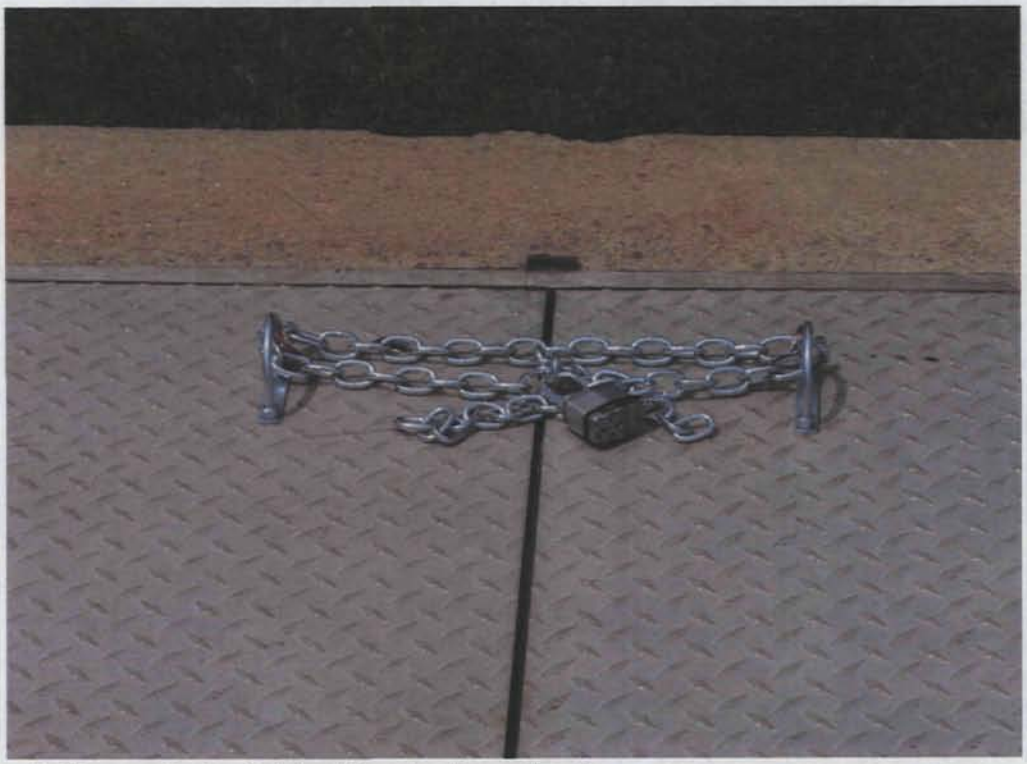

Figure 8: Closeup of lock and chain at the extraction well vault.

Figure 9: Electrical panel at the extraction well vault showing locks in all panel doors.

Figure 10: Extraction well BRW-1 and monitoring wells B-12R/L in front of Ms. Aikens' home and diagonally across the vault.